Acad. 4
157
S

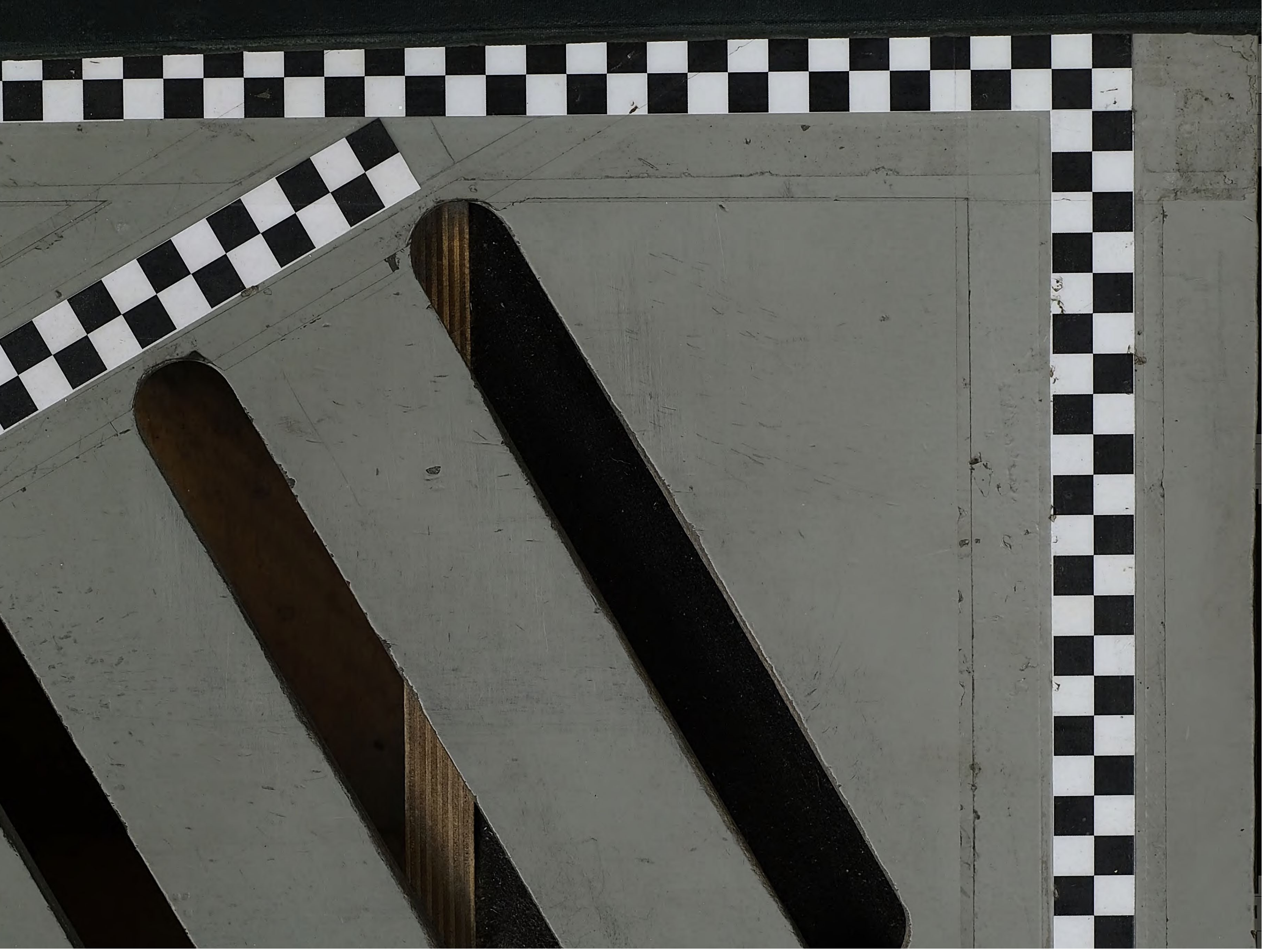
THSONIAN

IBUTIONS

OWLEDGE

WASHINGTON
WASHINGTON
IIXX

HINSVM
IIXX



Hº Acad.
157 5/22

HOLLANDSCHE MAATSCHAPPIJ
DER
WETENSCHAPPEN
HARLEM

SMITHSONIAN

Hollandsche Maatschappij der Wetenschappen HAARLEM

CONTRIBUTIONS TO KNOWLEDGE.

VOL. XXII.

EVERY MAN IS A VALUABLE MEMBER OF SOCIETY, WHO, BY HIS OBSERVATIONS, RESEARCHES, AND EXPERIMENTS, PROCURES KNOWLEDGE FOR MEN.—SMITHSON.

CITY OF WASHINGTON:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
MDCCCLXXX.

Wb/49/152

Bayerische
Staatsbibliothek
MÜNCHEN

PHILADELPHIA:
COLLINS, PRINTER, 705 JAYNE STREET.

Bayerische
Staatsbibliothek
MÜNCHEN

ADVERTISEMENT.

THIS volume forms the twenty-second of a series, composed of original memoirs on different branches of knowledge, published at the expense, and under the direction, of the Smithsonian Institution. The publication of this series forms part of a general plan adopted for carrying into effect the benevolent intentions of JAMES SMITHSON, Esq., of England. This gentleman left his property in trust to the United States of America, to found, at Washington, an institution which should bear his own name, and have for its objects the "*increase* and *diffusion* of knowledge among men." This trust was accepted by the Government of the United States, and an Act of Congress was passed August 10, 1846, constituting the President and the other principal executive officers of the general government, the Chief Justice of the Supreme Court, the Mayor of Washington,[1] and such other persons as they might elect honorary members, an establishment under the name of the "SMITHSONIAN INSTITUTION FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN." The members and honorary members of this establishment are to hold stated and special meetings for the supervision of the affairs of the Institution, and for the advice and instruction of a Board of Regents, to whom the financial and other affairs are intrusted.

The Board of Regents consists of two members *ex officio* of the establishment, namely, the Vice-President of the United States and the Chief Justice of the Supreme Court, together with twelve other members, three of whom are appointed by the Senate from its own body, three by the House of Representatives from its members, and six persons appointed by a joint resolution of both houses. To this Board is given the power of electing a Secretary and other officers, for conducting the active operations of the Institution.

To carry into effect the purposes of the testator, the plan of organization should evidently embrace two objects: one, the increase of knowledge by the addition of new truths to the existing stock; the other, the diffusion of knowledge, thus increased, among men. No restriction is made in favor of any kind of knowledge; and, hence, each branch is entitled to, and should receive, a share of attention.

[1] This office has been abolished.

The Act of Congress, establishing the Institution, directs, as a part of the plan of organization, the formation of a Library, a Museum, and a Gallery of Art, together with provisions for physical research and popular lectures, while it leaves to the Regents the power of adopting such other parts of an organization as they may deem best suited to promote the objects of the bequest.

After much deliberation, the Regents resolved to divide the annual income into two parts—one part to be devoted to the increase and diffusion of knowledge by means of original research and publications—the other part of the income to be applied in accordance with the requirements of the Act of Congress, to the gradual formation of a Library, a Museum, and a Gallery of Art.

The following are the details of the parts of the general plan of organization provisionally adopted at the meeting of the Regents, Dec. 8, 1847.

DETAILS OF THE FIRST PART OF THE PLAN.

I. To increase Knowledge.—*It is proposed to stimulate research, by offering rewards for original memoirs on all subjects of investigation.*

1. The memoirs thus obtained, to be published in a series of volumes, in a quarto form, and entitled "Smithsonian Contributions to Knowledge."

2. No memoir, on subjects of physical science, to be accepted for publication, which does not furnish a positive addition to human knowledge, resting on original research; and all unverified speculations to be rejected.

3. Each memoir presented to the Institution, to be submitted for examination to a commission of persons of reputation for learning in the branch to which the memoir pertains; and to be accepted for publication only in case the report of this commission is favorable.

4. The commission to be chosen by the officers of the Institution, and the name of the author, as far as practicable, concealed, unless a favorable decision be made.

5. The volumes of the memoirs to be exchanged for the Transactions of literary and scientific societies, and copies to be given to all the colleges, and principal libraries, in this country. One part of the remaining copies may be offered for sale; and the other carefully preserved, to form complete sets of the work, to supply the demand from new institutions.

6. An abstract, or popular account, of the contents of these memoirs to be given to the public, through the annual report of the Regents to Congress.

II. To increase Knowledge.—*It is also proposed to appropriate a portion of the income, annually, to special objects of research, under the direction of suitable persons.*

1. The objects, and the amount appropriated, to be recommended by counsellors of the Institution.

2. Appropriations in different years to different objects; so that, in course of time, each branch of knowledge may receive a share.

3. The results obtained from these appropriations to be published, with the memoirs before mentioned, in the volumes of the Smithsonian Contributions to Knowledge.

4. Examples of objects for which appropriations may be made:—

(1.) System of extended meteorological observations for solving the problem of American storms.

(2.) Explorations in descriptive natural history, and geological, mathematical, and topographical surveys, to collect material for the formation of a Physical Atlas of the United States.

(3.) Solution of experimental problems, such as a new determination of the weight of the earth, of the velocity of electricity, and of light; chemical analyses of soils and plants; collection and publication of articles of science, accumulated in the offices of Government.

(4.) Institution of statistical inquiries with reference to physical, moral, and political subjects.

(5.) Historical researches, and accurate surveys of places celebrated in American history.

(6.) Ethnological researches, particularly with reference to the different races of men in North America; also explorations, and accurate surveys, of the mounds and other remains of the ancient people of our country.

I. To diffuse Knowledge.—*It is proposed to publish a series of reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not strictly professional.*

1. Some of these reports may be published annually, others at longer intervals, as the income of the Institution or the changes in the branches of knowledge may indicate.

2. The reports are to be prepared by collaborators, eminent in the different branches of knowledge.

3. Each collaborator to be furnished with the journals and publications, domestic and foreign, necessary to the compilation of his report; to be paid a certain sum for his labors, and to be named on the title-page of the report.

4. The reports to be published in separate parts, so that persons interested in a particular branch, can procure the parts relating to it, without purchasing the whole.

5. These reports may be presented to Congress, for partial distribution, the remaining copies to be given to literary and scientific institutions, and sold to individuals for a moderate price.

The following are some of the subjects which may be embraced in the reports:—

I. PHYSICAL CLASS.

1. Physics, including astronomy, natural philosophy, chemistry, and meteorology.
2. Natural history, including botany, zoology, geology, &c
3. Agriculture.
4. Application of science to arts.

II. MORAL AND POLITICAL CLASS.

5. Ethnology, including particular history, comparative philology, antiquities, &c.
6. Statistics and political economy.
7. Mental and moral philosophy.
8. A survey of the political events of the world; penal reform, &c.

III. LITERATURE AND THE FINE ARTS.

9. Modern literature.
10. The fine arts, and their application to the useful arts.
11. Bibliography.
12. Obituary notices of distinguished individuals.

II. To diffuse Knowledge.—*It is proposed to publish occasionally separate treatises on subjects of general interest.*

1. These treatises may occasionally consist of valuable memoirs translated from foreign languages, or of articles prepared under the direction of the Institution, or procured by offering premiums for the best exposition of a given subject.

2. The treatises to be submitted to a commission of competent judges, previous to their publication.

DETAILS OF THE SECOND PART OF THE PLAN OF ORGANIZATION.

This part contemplates the formation of a Library, a Museum, and a Gallery of Art.

1. To carry out the plan before described, a library will be required, consisting, 1st, of a complete collection of the transactions and proceedings of all the learned societies of the world; 2d, of the more important current periodical publications, and other works necessary in preparing the periodical reports.

2. The Institution should make special collections, particularly of objects to verify its own publications. Also a collection of instruments of research in all branches of experimental science.

3. With reference to the collection of books, other than those mentioned above, catalogues of all the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not to be found elsewhere in the United States.

4. Also catalogues of memoirs, and of books in foreign libraries, and other materials, should be collected, for rendering the Institution a centre of bibliographical knowledge, whence the student may be directed to any work which he may require.

5. It is believed that the collections in natural history will increase by donation, as rapidly as the income of the Institution can make provision for their reception; and, therefore, it will seldom be necessary to purchase any article of this kind.

6. Attempts should be made to procure for the gallery of art, casts of the most celebrated articles of ancient and modern sculpture.

7. The arts may be encouraged by providing a room, free of expense, for the exhibition of the objects of the Art-Union, and other similar societies.

8. A small appropriation should annually be made for models of antiquity, such as those of the remains of ancient temples, &c.

9. The Secretary and his assistants, during the session of Congress, will be required to illustrate new discoveries in science, and to exhibit new objects of art; distinguished individuals should also be invited to give lectures on subjects of general interest.

In accordance with the rules adopted in the programme of organization, each memoir in this volume has been favorably reported on by a Commission appointed

for its examination. It is however impossible, in most cases, to verify the statements of an author; and, therefore, neither the Commission nor the Institution can be responsible for more than the general character of a memoir.

The following rules have been adopted for the distribution of the quarto volumes of the Smithsonian Contributions:—

1. They are to be presented to all learned societies which publish Transactions, and give copies of these, in exchange, to the Institution.

2. Also, to all foreign libraries of the first class, provided they give in exchange their catalogues or other publications, or an equivalent from their duplicate volumes.

3. To all the colleges in actual operation in this country, provided they furnish, in return, meteorological observations, catalogues of their libraries and of their students, and all other publications issued by them relative to their organization and history.

4. To all States and Territories, provided there be given, in return, copies of all documents published under their authority.

5. To all incorporated public libraries in this country, not included in any of the foregoing classes, now containing more than 10,000 volumes; and to smaller libraries, where a whole State or large district would be otherwise unsupplied.

OFFICERS

OF THE

SMITHSONIAN INSTITUTION.

THE PRESIDENT OF THE UNITED STATES,

Ex-officio PRESIDING OFFICER OF THE INSTITUTION.

MORRISON R. WAITE,

CHANCELLOR OF THE INSTITUTION.

SPENCER F. BAIRD,

SECRETARY OF THE INSTITUTION.

WILLIAM J. RHEES,

CHIEF CLERK.

DANIEL LEECH,

CORRESPONDING CLERK.

CLARENCE B. YOUNG,

BOOKKEEPER.

PETER PARKER,
JOHN MACLEAN,
WILLIAM T. SHERMAN, } EXECUTIVE COMMITTEE.

REGENTS.

MORRISON R. WAITE, ...	*Chief Justice of the United States.*
WILLIAM A. WHEELER, ...	*Vice-President of the United States.*
HANNIBAL HAMLIN, ...	*Member of the Senate of the United States.*
R. E. WITHERS, ...	" " " " " "
NEWTON BOOTH, ...	" " " " " "
HIESTER CLYMER, ...	*Member of the House of Representatives U. S.*
JOSEPH E. JOHNSTON, ...	" " " " " "
JAMES A. GARFIELD, ...	" " " " " "
JOHN MACLEAN, ...	*Citizen of New Jersey.*
PETER PARKER, ...	" *of Washington.*
WILLIAM T. SHERMAN, ...	" "
ASA GRAY, ...	" *of Massachusetts.*
HENRY COPPÉE, ...	" *of Pennsylvania.*
NOAH PORTER, ...	" *of Connecticut.*

MEMBERS EX-OFFICIO OF THE INSTITUTION.

RUTHERFORD B. HAYES, ...	*President of the United States.*
WILLIAM A. WHEELER, ...	*Vice-President of the United States.*
MORRISON R. WAITE, ...	*Chief Justice of the United States.*
WILLIAM M. EVARTS, ...	*Secretary of State.*
JOHN SHERMAN, ...	*Secretary of the Treasury.*
G. W. MCCRARY, ...	*Secretary of War.*
RICHARD W. THOMPSON, ...	*Secretary of the Navy.*
CARL SCHURZ, ...	*Secretary of the Interior.*
DAVID M. KEY, ...	*Postmaster-General.*
CHARLES DEVENS, ...	*Attorney-General.*
H. E. PAINE, ...	*Commissioner of Patents.*

TABLE OF CONTENTS.[1]

PAGE

ARTICLE I. INTRODUCTION. Pp. 16.

Advertisement iii
List of Officers of the Smithsonian Institution ix

ARTICLE II. (259.) EXPLORATIONS OF THE ABORIGINAL REMAINS OF TENNESSEE. By JOSEPH JONES, M.D. Published October, 1876. 4to. pp. 181. Ninety-five wood-cuts.

CHAPTER I. Burial Caves 1
CHAPTER II. Modes of Burial practised by the Aborigines of America 7
Stone Graves 7
CHAPTER III. Mounds, Fortifications, and Earthworks . . . 36
Stone-grave Burial Mounds 37
Sacrificial and Burial Mounds 41
CHAPTER IV. Earthworks on the Big Harpeth River . . . 56
CHAPTER V. Earthworks on West Harpeth and Big Harpeth Rivers . 79
Earthworks at Old-Town 82
CHAPTER VI. The Stone Fort and other Aboriginal Remains . . 100
Aboriginal Remains in Maury County . . . 107
CHAPTER VII. Relics from the Mounds and Stone Graves . . 128
Stone and Clay Images 128
Shell, Pearl, and Copper Ornaments . . . 136
Aboriginal Rock-paintings 137
Pipes 138
Weapons 139
Coins 140
Implements of Stone employed for Mechanical purposes . 141
Stone and Earthenware Vessels 144
CHAPTER VIII. General Conclusions 146

ARTICLE III. (269.) THE SCULPTURES OF SANTA LUCIA COSUMALWHUAPA IN GUATEMALA. WITH AN ACCOUNT OF TRAVELS IN CENTRAL AMERICA AND ON THE WESTERN COAST OF SOUTH AMERICA. By S. HABEL, M.D. Published February, 1878. 4to. pp. 94. Eight plates of twenty-five figures.

First Excursion from the City of Guatemala 3
Second Excursion from the City of Guatemala 10
Third Excursion from the City of Guatemala 14
Fourth Excursion from the City of Guatemala 16
First Excursion from San Salvador 17
Second Excursion from San Salvador 22
Third Excursion from San Salvador 26
Explorations in San Salvador 31
Explorations on the West Coast of South America . . . 39
The Sculptured Stones at Santa Lucia Cosumalwhuapa . . . 64
Reflections on the Sculptures 82

[1] Each memoir is separately paged and indexed.

PAGE

ARTICLE IV. (287.) THE ARCHÆOLOGICAL COLLECTION OF THE UNITED STATES NATIONAL MUSEUM, IN CHARGE OF THE SMITHSONIAN INSTITUTION, WASHINGTON, D. C. By CHARLES RAU. Published August, 1876. 4to. pp. 118. Three hundred and forty wood-cuts.

Introduction 1
Stone 7
A. Flaked and Chipped Stone 7
1. Raw Material 7
2. Irregular Flakes of Flint, Obsidian, etc., produced by a single blow 8
3. Two-edged narrow Flakes of Obsidian and Prismatic Cores or Nuclei, from which such Flakes have been detached by pressure 8
4. Pieces of Flint, Quartz, Obsidian, etc., roughly flaked, and either representing rude tools, or designed to be wrought into more regular forms—Unfinished Arrow and Spear-heads 8
5. Arrow-heads 8
6. Spear-heads 10
7. Perforators 12
8. Scrapers 13
9. Cutting and Sawing Implements 13
10. Dagger-shaped Implements 14
11. Leaf-shaped Implements 15
12. Large flat Implements of silicious material, usually ovoid in shape, and sharp around the circumference (Digging Tools) 16
13. Large flat Implements, mostly of oval outline, but truncated and laterally notched at the end opposite the working edge (Digging Tools) 16
14. Wedge or Celt-shaped Implements 17
B. Pecked, Ground and Polished Stone 17
1. Wedges or Celts 17
2. Chisels 18
3. Gouges 18
4. Adzes 19
5. Grooved Axes 19
6. Hammers 21
7. Drilled Ceremonial Weapons 23
8. Cutting Tools 24
9. Scraper and Spade-like Implements 25
10. Pendants and Sinkers 26
11. Discoidal Stones and Implements of kindred Shape . . 28
12. Pierced Tablets and Boat-shaped Articles . . . 32
13. Stones used in Grinding and Polishing . . . 34
14. Vessels 36
15. Mortars 38
16. Pestles 41
17. Tubes 43
18. Pipes 45
19. Ornaments 51
20. Sculptures 54

PAGE

Copper 59
Bone and Horn 63
Shells 66
Clay 73
Wood 88
Supplement 90
Appendix I. 93
The Aboriginal Modes of Hafting Stone and Bone Implements . 93
Appendix II. 97
System adopted in Arranging the Smithsonian Collection illustrative of North American Ethnology 97
I. Man, Objects relating to 97
II. Culture, Objects relating to 97
Index 103

ARTICLE V. (331.) THE PALENQUE TABLET IN THE UNITED STATES NATIONAL MUSEUM, WASHINGTON, D. C. By CHARLES RAU. Published November, 1879. 4to. pp. 91. Two plates, thirty-nine wood-cuts.

CHAPTER I. History of the Palenque Tablet 1
CHAPTER II. Explorations of Palenque 5
CHAPTER III. The Temple of the Cross 15
CHAPTER IV. The Group of the Cross 31
CHAPTER V. Aboriginal Writings in Mexico, Yucatan, and Central America 47
APPENDIX: Notes on the Ruins of Yucatan and Central America . . 65

ARTICLE VI. (318.) ON THE REMAINS OF LATER PRE-HISTORIC MAN OBTAINED FROM CAVES IN THE CATHERINA ARCHIPELAGO, ALASKA TERRITORY, AND ESPECIALLY FROM THE CAVES OF THE ALEUTIAN ISLANDS. By W. H. DALL. Published January, 1876. 4to. pp. 44. Ten plates.

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.
259

EXPLORATIONS

OF THE

ABORIGINAL REMAINS OF TENNESSEE.

BY

JOSEPH JONES, M.D.,
PROFESSOR OF CHEMISTRY AND CLINICAL MEDICINE IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA, NEW ORLEANS.

WASHINGTON CITY:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
[OCTOBER, 1876.]

ADVERTISEMENT.

THIS memoir gives the results of a very extended investigation of the remains of the ancient inhabitants of Tennessee, by Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine in the Medical Department of the University of Louisiana, at New Orleans.

An appropriation was made by the Institution to assist Dr. Jones in his exploration of these remains, and to the work he has devoted much time and labor. The memoir was submitted to Dr. Otis, of the Medical Department U. S. Army, and to Professor O. T. Mason, of Columbian University, and on their approval has been accepted for publication.

JOSEPH HENRY,
Secretary Smithsonian Institution.

SMITHSONIAN INSTITUTION,
WASHINGTON, D. C., *October*, 1876.

PREFACE.

THE following explorations among the Mounds, Earthworks, and Stone-graves of the Aborigines of Tennessee, were commenced in the early part of 1868, and were continued to the close of 1869.

The inductive method was followed in the entire investigation, and in presenting an outline of the explorations the effort has been made to accomplish two results:—

1st. The accurate description of the aboriginal remains.

2d. The collection and classification of such facts as bore on their obscure history.

With the limited means at the command of the author, and with numerous pressing professional duties and cares, he was unable to carry forward the explorations on the scale which their importance demanded; but it is hoped that these imperfect labors may prove of some service to future explorers in this interesting field.

The thanks of the author are due to Mr. R. M. Ewing, Dr. Freeman, Mr. Parish, and General De Graffenreid, of Franklin, Mr. Brown, of Old Town, Colonel Overton, of Natchez, and to his intelligent and kind friends, Dr. John Watson Morton, of Nashville, and Dr. John H. Morton, of Union City, Tennessee, for valuable aid during the explorations of the stone-graves and mounds.

CONTENTS.

		PAGE
CHAPTER I.	Burial caves	1
II.	Modes of burial practised by the aborigines of America	7
	Stone graves	7
III.	Mounds, fortifications, and earthworks	36
	Stone-grave burial mounds	37
	Sacrificial and burial mounds	41
IV.	Earthworks on the Big Harpeth River	56
V.	Earthworks on West Harpeth and Big Harpeth Rivers	79
	Earthworks at Old-Town	82
VI.	The Stone Fort and other aboriginal remains	100
	Aboriginal remains in Maury County	107
VII.	Relics from the mounds and stone-graves	128
	Stone and clay images	128
	Shell, pearl, and copper ornaments	136
	Aboriginal rock-paintings	137
	Pipes	138
	Weapons	139
	Coins	140
	Implements of stone employed for mechanical purposes	141
	Stone and earthenware vessels	144
VIII.	General conclusions	146

LIST OF ILLUSTRATIONS.

FIG. PAGE

1. Small vase of clay and crushed shells from stone coffin near Nashville, front view . 40
2. Side view of same 40
3. Drinking cup of clay and crushed shells from stone grave near Brentwood . . 41
4. Hollow image of clay and crushed shells from stone grave near Brentwood . . 41
5. Image of clay and shells representing deformed female from stone grave near Nashville 41
6. Various forms of shell beads from stone coffins in mounds opposite Nashville . . 42
7. Shell ornament from breast of skeleton in stone coffin in mound opposite Nashville, concave surface 43
8. Convex surface of same 43
9. Image of clay and crushed shells from child's grave opposite Nashville . . . 44
10. Wooden ornament coated with copper from stone grave opposite Nashville . . 45
11. Double-headed stone hatchet of green chloritic stone from mound opposite Nashville . 46
12. Arrow-head from stone grave 46
13, 14. Outlines of cranium from stone grave in mound opposite Nashville . . . 48
15. Shell ornament from stone grave of child opposite Nashville 48
16. Stone implement from stone grave in mound in Nashville 50
17. Disk of crushed shells and clay from stone grave, Nashville 50
18. Knobbed surface of clay disk 50
19. Biconcave stone disk from stone grave 51
20. Celt from stone grave in Nashville 51
21. Stone implement of silex from ancient burying ground near Nashville . . . 53
22. Black vase from aboriginal cemetery near Nashville 54
23. Plan of works and relative position of mounds on plantation of Genl. de Graffenreid . 56
24. Stone sword or spear head from ancient earthwork on Big Harpeth River . . 58
25. Copper plate with cross stamped in centre from stone grave in mound on Big Harpeth River 59
26. Yellow clay vase with powdered shell dégraissant from stone grave in mound on Big Harpeth River 59
27. Bottom of same 59
28. Vase from stone grave in burial mound on Big Harpeth River 60
29. Carved sea-shell from stone grave in burial mound on Big Harpeth River . . 60
30. Carvings on same 60
31. Head crowned with helmet from mound in Williamson Co. 63
32. Black earthenware head from ancient earthwork near Hickman 63
33. Small reddish-yellow cup or pot of fine clay from stone grave 64
34. Group of vases and pots of crushed shells and clay from stone graves on Harpeth River 74
35. Group of vases of same material and locality 74
36. Discoidal stone from ancient works on Big Harpeth River 74
37. Biconcave discoidal stone from ancient works on Big Harpeth River . . . 74
38. Hatchet of hard green chloritic slate from stone grave in works on Big Harpeth River . 75
39. Polished wedge or fleshing instrument of green chlorite from stone grave in works on Big Harpeth River 75

FIG. PAGE

40. Small chisel of green chloritic stone sharpened at both ends from stone grave in works on Big Harpeth River 75
41. Sandstone pipe from stone grave 75
42. Stone pipe from aboriginal works near Murfreesboro' 76
43. Spear-head from ancient works on Big Harpeth River 76
44. Small hollow image from aboriginal mound, side view 77
45. Front view of same 77
46. Plan of works and mounds on West Harpeth River 79
47. Plan of works, mounds, and stone graves at Old Town 82
48, 49, 50. Earthenware vessels of dark clay and crushed shells from stone graves at Old Town 83
51. Earthenware vessels from Old Town 84
52. Black vase or pot of dark clay and crushed shells from stone grave at Old Town . 84
53. Pipe of coarse yellow sandstone from Old Town 87
54. Implement of hard greenstone from Old Town 87
55. Celts from valley of Big Harpeth River 87
56. Plan of stone fort near Manchester, Tenn. 100
57. Plan of entrance to stone fort 101
58. Stone pipe found near stone fort 103
59. Stone implements from vicinity of stone fort 103
60. Plan of stone fort as executed by E. W. Nance 103
61. Images from Rock Mound near Pulaski 108
62. A, Stone implement; B, shell ornament; C, fragment of jaw and tooth from rock mound near Pulaski 109
63. Craniograph 112
64. Chinooks (flatheads) 123
65. Osage chiefs and braves 124
66. Stone idol from Knox Co., Tenn., front and side view 128
67. Stone idols, male and female, from Cumberland Valley, front view 129
68. Side view of same 129
69. Stone image from Henry Co., Tenn., front view 130
70. Side view of same 130
71. A, Small idol from mound in Perry Co., Tenn.; B, small hollow clay idol from stone grave at Boiling Springs, Tenn.; C, black clay idol from pyramid of Cholula, Mexico . 132
72. Image from stone grave in valley of Cumberland 133
73. A, Chinese figure Tae-heih; B, symbolic divisions of circle by ancient stone grave race of Tennessee 137
74. Small stone pipe from mound near Hickman, Ky. 138
75. Stone implement (scalping knife) from valley of the Cumberland River 139
76. Chipped celt from stone grave in Cumberland Valley 139
77. Jasper spear-head from Cumberland Valley 140
78. Jasper spear-head from stone grave 140
79. Stone implement of silex from valley of the Cumberland 140
80. Plummet of black magnetic iron 141
81. Cone of hæmatite from the Cumberland Valley 141
82. Celts from middle Tennessee 142
83. Celts from the valley of the Cumberland River 142
84. A, B, C, Implements of clay and crushed shells 143
85. Stone vessel from mound near Tallahatchie River 144

ANTIQUITIES IN TENNESSEE.

CHAPTER I.

BURIAL CAVES.

By the first settlers of Tennessee, many of the caves which abound in the limestone formation were found to contain human bones in abundance, which had been deposited by the race formerly inhabiting this country. The working of these caves for *nitre* during the revolutionary war, the Indian war, the last war with Great Britain, and the recent civil war of 1861–1865, has resulted in the removal and destruction of these human remains. I have visited several caves which are known to have contained human bones in former times, without obtaining any of these ancient relics. As far as my observations extended, the caves containing the human remains were always located in the vicinity of fertile valleys and plains in the neighborhood of some river or never-failing spring of water. Large mounds were generally found in the same localities, and the condition of the former inhabitants was evinced by the numerous fragments of pottery, arrow-heads, and other stone implements.

Numerous stone graves containing human remains are, at the present day, found along the banks of the rivers and streams, in the fertile valleys, and around the cool springs which abound in the limestone region of Tennessee and Kentucky. These ancient repositories of the dead are frequently surrounded by extensive earth-works, which inclose imposing monumental remains.

In these remains we have proof that this country, in common with other portions of the great valley of the Mississippi, was inhabited in ancient times by a comparatively dense population, which subsisted on the products of husbandry as well as by the chase.

It is important, in the first place, to examine the testimony of the earlier explorers and writers upon the deposits of human bones in caves.

The early pioneers and hunters discovered everywhere in the more fertile regions of Middle Tennessee marks of the ancient inhabitants, and they described the caves which they visited at that time as "full of human bones." Haywood[1] relates that, in the spring of the year 1811, the remains of two human beings were found in a copperas cave in Warren County, in West Tennessee, about fifteen miles

[1] Natural and Aboriginal History of Tennessee, pp. 163–166.

southwest from Sparta, and twenty miles from McMinnville. One of them was a male, the other a female. They were interred in baskets made of cane curiously wrought, and evidencing considerable mechanical skill. They were both dislocated at the hip-joint, and were placed erect in the baskets, with a covering of cane made to fit the inclosure in which they were placed. The flesh of their bodies was undecayed, of a brown color, and adherent to the bones and sinews. Around the female, next to the body, was wrapped a well-dressed doe-skin; next to this was a mat very curiously wrought from the bark of a tree, and feathers. The bark seemed to have been made into small strands, well twisted. Around each of these strands feathers were rolled, and the whole was woven into cloth of a fine texture, after the manner of our common, coarse fabrics. This mat was about three feet wide, and between six and seven feet in length. The whole of the fabric thus formed of bark was completely covered by the feathers, the body of it being about one-eighth of an inch in thickness, and the feathers extending about one-quarter of an inch from the strand to which they were attached. The appearance was highly diversified by green, yellow, and black feathers, presenting different shades of color when exposed to the sunlight in different positions. The next covering was an undressed doe-skin, around which was rolled, in good order, a plain shroud, manufactured after the same plan as the one ornamented with feathers. This article resembled very much, in its texture, the bags generally used for the purpose of holding coffee exported from Havana to the United States. The female had in her hand a fan formed of the tail feathers of a turkey, bound with buckskin strings and scarlet-colored hair, so as to open and shut readily. The hair of the mummies was still remaining upon their heads, and was of a yellow cast and of very fine texture.

De Soto, during his march in 1539 and 1540 through the territory now included within the limits of Florida, Alabama, Georgia, and Tennessee, saw great numbers of similar feathered mantles among various Indian nations; and the Mexicans, at the time of the Spanish conquest, were clad in similar garments. John Lawson, in his "New Voyage to Carolina," in describing his visit to the King of Santee, says: "He brought with him their chief doctor or physician, who was warmly and neatly clad with a match-coat made of turkeys' feathers, which makes a pretty show, seeming as if it was a garment of the deepest silk shag," p. 18. In the island of O-why-hee, in the Pacific Ocean, in the year 1777, when Captain Cook visited it, the king and his chiefs were dressed in red feathered cloaks, which in point of beauty and magnificence were said to have been nearly equal to those of any other nation. Fans were made there also of the fibres of the cocoa-nut, of the tail feathers of the cock and of the tropic bird, and also feathered caps were worn. In 1730, the Indians of North Carolina used feathered match coats, exceedingly pretty, says Dr. Brickel; some of which, he also remarks, are beautifully wrought with a variety of colors and figures, which seem at a distance like a fine flowered silk shag. When new and fresh, he continues, they serve for a bed instead of a quilt. Some match-coats, he says, were made of hair, or of raccoon, beaver, or squirrel skins; others again were made of the green parts of the skin of the mallard's head or of the skins of other fowls, which they stitch or sew perfectly well

together; their thread being the sinews of the deer divided very small. When they were finished, they appeared very beautiful.

Haywood describes a cave, the aperture into which was very small, near the confines of Smith and Wilson Counties, on the south side of Cumberland River, about twenty-two miles above Cairo, on the waters of Smith's Fork. The workmen digging in the apartment next the entrance, after removing the dirt, came to another small aperture upon the same level, which they also entered, and found a room twenty-five feet square. This room seemed to have been carefully preserved for the reception and burial of the dead. In it, near the centre, were found three human bodies sitting in baskets made of cane, the flesh being entire, but a little shrivelled and hard. The bodies were those of a man, a woman, and a small child. The color of the skin was said to be fair and white, without any admixture of a copper color; their hair auburn and of a fine texture. The teeth were very white; in stature they were about the same as the whites of the present day. The man was wrapped in fourteen dressed deer skins, and over these were wound what those present called blankets. They were made of bark, like those found in the cave in White County. In form the baskets were pyramidal, being larger at the bottom and tapering towards the top. The heads of the skeletons were outside of the blankets.[1]

At the plantation of Mr. William Sheppard, in the County of Giles, seven and a half miles north of Pulaski, on the east side of the creek, is a cave with several rooms. The first is fifteen feet wide, twenty-seven feet long, and four feet deep; the upper part is of solid rock. Leading into this cave was a passage which had been so artfully covered that it escaped detection till lately. A flat stone, three feet wide and four feet long, rested upon the ground, and, inclining against the bank, closed part of the mouth. Into the part of the mouth left open, had been rolled another stone which closed the whole opening. When these stones were removed and the cave was first entered, the jaw-bone of a child, the arm-bone, the skull, and thigh-bones of a man were found. The whole bottom of the cave was paved with flat stones of a bluish color closely joined together, but of different shapes and sizes. They formed a smooth floor upon which the bones were laid.[2]

Twelve miles below Carthage, and about a mile from the Cumberland River, is a cave in which occurred human bones of all sizes. There is a burying-ground near to the fortification, in which, fifteen years ago, were discovered many skeletons, and with them were deposited pipes and water-vessels of earthenware. Near to this cemetery is a deep creek running into the river, and forming an acute angle with the latter. At some distance from the junction is a ditch running from the creek to the river, and the remains of a parapet. Opposite to the entrance-way, and about six feet from it, is the appearance of a wall on the inside, so formed as to turn those entering to the right or left. In the interior were several mounds.[3]

Captain Daniel Williams, a man of undoubted veracity, is said to have affirmed that, several years ago, in a cave five or six miles above Carthage, on the Cumber-

---

[1] Natural and Aboriginal History of Tennessee, p. 191.

[2] Haywood, Nat. and Ab. Hist. p. 195.

[3] Haywood, p. 169.

land River, workmen were collecting earth for saltpetre, and that many human skeletons were found, one of which was a female in a good state of preservation, with yellow hair, and shrivelled flesh. Around the waist was a silver girdle, with marks resembling letters. The body was replaced in the cave whence they had taken it.[1]

On the north bank of the Holston, five miles above the mouth of the French-Broad, are six mounds, within half an acre of ground, placed without any apparent regularity. They are in form truncated pyramids. The bases are from ten to thirty feet in diameter. The largest of them are ten feet in height. Their form is remarkably regular. In one of them, which was cut into perpendicularly, a small quantity of charcoal and ashes was discovered. These mounds are inclosed by an old ditch, which can at this time be traced distinctly on the sides, and which incloses several acres of land besides the mounds. At every angle of the ditch is a bastion in the form of a semicircle. On the south bank, opposite the mound, is a bluff of limestone, in which is a cave. This bluff is one hundred feet in height. On it are faintly painted, in red colors, the sun and moon, a man, birds, fishes, etc. These figures have in part faded within a few years. Tradition says they were made by the Cherokees, who were accustomed in their journeys to rest at this place. Whether such a tradition is entitled to credit is for the judicious reader to determine. Wherever perpendicular cliffs or bluffs occur on the rivers of Tennessee, and especially if caves are in them, mounds are often found near them, inclosed in entrenchments, the sun and moon being painted on the rocks, and charcoal and ashes being found in the smaller tumuli. These tokens seem to afford evidence of a connection between the mounds, the charcoal and ashes, the paintings, and the caves. The latter frequently contain the skulls of human beings alleged to have been sacrificed by fire on the mounds. The paintings are supposed to have represented the deities whom the people worshipped; and the ditches may possibly have pointed out the consecrated ground, which was not to be polluted by the tread of unhallowed feet. The large mounds with levelled tops, containing below the surface of the upper part an image of stone, which is supposed formerly to have stood upon the summit, or sometimes having the image at the margin of its base covered with soil a few inches, as if it had tumbled from the top, are supposed to have been the high places around which the people assembled to offer up their adorations.[2]

"A human body was found, in the year 1815, in one of the limestone caverns of Kentucky. The skin, bones, and other firm parts were in a state of entire preservation. The outer envelope of the body was a deer-skin dressed in the usual way, and, perhaps, subsequently softened by rubbing before being used. The next covering was a deer-skin, the hair of which had been cut away by a sharp instrument. The remnant of the hair and the gashes in the skin nearly resembled the sheared felt of beaver. The next wrapping was of cloth, made of *twine* doubled and twisted. The innermost wrapping was a mantle of cloth like the preceding, but

---

[1] Haywood, p. 100.

[2] Haywood, pp. 148, 149.

finished with large brown feathers arranged and fastened with great skill, so as to be capable of guarding the living wearer from wet and cold. The plumage was distinct and entire, and the whole bore a near similitude to the feathered cloaks now worn by the natives of the northwest coast of America. The body was in a squatting posture, with the right arm bent forward, and its hand encircling the right leg. The left arm hung down, with its hand extending partly under the body. The individual, who was a male, did not probably exceed the age of fourteen at his death. There was a deep and extensive fracture of the skull near the occiput, which was probably the cause of his death. The skin had sustained little injury. It was of a dusky color, but the natural hue could not be decided with exactness from its appearance at that time. The scalp, with small exceptions, was covered with sorrel and foxy hair. The teeth were white and sound. The hands and feet seem to have been slender and delicate. Some are inclined to the opinion that this specimen belonged to the Peruvian race."[1]

The light color of the hair, in these so-called mummies of Tennessee and Kentucky, was most probably due to the action of the lime and saltpetre.

When Kentucky was first explored, great numbers of human bodies are said to have been found in a state of preservation in a cave near Lexington. As the pioneers did not appear to attach much importance to antiquities, these bodies were not preserved. The bodies found in the saltpetre cave of Kentucky are said to have been considerably smaller than the men of our times; and their teeth are described as long, white, and sharp, and separated by considerable intervals.

Mr. Caleb Atwater quotes Mr. Clifford of Lexington, Kentucky, to the effect that the mummies were generally found enveloped in three coverings; the first a species of coarse linen cloth of about the consistency and texture of cotton bagging; the second a kind of network of coarse threads formed of very small, loose meshes, in which were fixed the feathers of various kinds of birds, lying all in one direction, so as to make a perfectly smooth surface; the third and outer envelope either like the first or consisting of skins sewed together.[2]

Mr. Charles Wilkins, in 1817, recorded the following facts with reference to an exsiccated body discovered in a saltpetre cave in Warren County, Kentucky: "It was found at the depth of about ten feet from the surface of the cave, bedded in clay, strongly impregnated with nitre, placed in a sitting posture, encased in broad stones standing on their edges, with a flat stone covering the whole. It was enveloped in coarse clothes, the whole wrapped in deer-skins, the hair of which was shaved off in the manner in which the Indians prepare them for market. Inclosed in the stone coffin were working utensils, beads, feathers, and other ornaments of dress."[3]

This observation is important, for it establishes the fact that the mode of burial practised in the case of this so-called mummy was similar to that in use along the banks of the Cumberland and other streams of Tennessee and Kentucky; and we

---

[1] Natural and Aboriginal History of Tennessee, Haywood, pp. 338, 339.
[2] Archæologia Americana, p. 318.
[3] Ibid., p. 392.

are justified in the conclusion that the bodies deposited in the stone graves were arrayed in dresses similar to those in which the exsiccated bodies in the saltpetre caves were inclosed. The latter were preserved from decay, undoubtedly, by the saltpetre and lime salts and the drier atmosphere of the caves.

In the numerous stone graves which I have opened, traces of the garments which originally surrounded the bodies could be discerned in only one of the most perfectly constructed stone coffins.

CHAPTER II.

MODES OF BURIAL PRACTISED BY THE ABORIGINES OF AMERICA.

Stone Graves.

The ancient race of Tennessee buried their dead in rude stone coffins or cists, constructed of flat pieces of limestone or slaty sandstone which abound in Middle Tennessee.

Extensive graveyards, in which the stone coffins lie close to each other, are found in Tennessee and Kentucky, along the river-courses, in the valleys, and around the springs.

A considerable portion of the city of Nashville has been built over an extensive Indian graveyard which lay along the valley of Lick Branch. A large number of these graves have been destroyed in the building of North Nashville. In this section of the city I saw a number of them quite exposed during the digging of the cellars of a row of houses, and obtained from them a small stone hatchet and another implement of hard silicious material, beautifully polished. This stone implement is supposed to have been used in the dressing of hides. All around the sulphur spring, traces of the aborigines are manifest in the form of fragments of large pots and various stone implements. It is supposed that the salt lick was frequented by the aborigines for the purpose of killing the buffalo and deer which resorted there, and also for the manufacture of salt. A number of interesting relics are said to have been found in the banks around the sulphur spring; and I myself have gathered a large number of fragments of pottery in this locality, and found them to be uniformly composed of a mixture of crushed river shells and clay. Many of these fragments were nearly one inch in thickness, with an almost imperceptible convexity indicating that they had once formed parts of very capacious vessels. From the markings upon the exterior they appear to have been moulded in baskets made of split cane.

An extensive burying-ground lies on the opposite bank of the Cumberland, directly across from the mouth of Lick Branch, surrounding a chain of four mounds. One of these mounds appeared to have been the burying place of a royal family. Two of the smaller ones are thought to have been the general burying-ground of the tribe, whilst the largest one may possibly have been erected as a site for the residence of the chief, or for a temple. In the low alluvial plain, all around these stone graves, are scattered fragments of pottery, arrow-heads, and other stone implements. The caving of the bluff constantly exposes stone graves, skeletons, and relics of various kinds.

A graveyard is located on the same bank of the Cumberland River, about a mile and a half lower down; another at Cockrill's Spring, two and a half miles from the sulphur spring; another six miles from Nashville, on the Charlotte Turnpike; another about eight miles above, near the mouth of Stone's River; and still another at Haysborough. I opened a number of stone graves on the farm of Col. W. D. Gale, about three miles from Nashville. At the foot of the hill upon which the residence is situated flows a never-failing spring. The Indians used the hill above the spring as a burying-ground. I exhumed from one grave a small black idol, from another copper ornaments, and from other graves upon the same hill vases of various forms. Many other localities might be enumerated in the immediate vicinity of Nashville.

Numerous stone graves are also found on White's Creek; on the Dickinson Turnpike, nine miles from Nashville; at Sycamore, twenty-two miles from this city, in Cheatham County; on the plantation of Col. Overton, nine miles from Sycamore; in and around Brentwood; at the Boiling Springs; and on the plantation of Mr. Scales.

Extensive Indian burying-grounds are also found in White County, near Sparta, and along the various streams flowing into the Cumberland and Tennessee Rivers, as Harpeth, Duck, Elk, and Stone Rivers.

At the plantation of Gen. De Graffenreid, two and a half miles above Franklin, numerous stone graves are found within and around an extensive earthwork, which appears to have surrounded a considerable Indian town. One large mound, pyramidal in shape and two hundred and thirty feet in diameter, together with a chain of small conical mounds, is found within the ancient fortification. Several of the smaller mounds contain numerous stone graves; some are also scattered about at the base of several of the larger mounds. An extensive burying-ground is also situated on the slope of the hill overlooking the mounds and earthwork.

One of the most extensive and remarkable collections of stone graves is on the west fork of Big Harpeth, six and a half miles from Franklin, at a place called Old-Town, the property of Mr. Thomas Brown.

Extensive graveyards are also found at various localities along the banks of the Harpeth River down to its junction with the Cumberland.

These graves, although justly considered as rude fabrics, nevertheless exhibit considerable skill in their construction, and are standing memorials of the regard in which this ancient race held the memory of the dead.

The manner of burial seems to have been as follows: An excavation of a size agreeing with that of the body of the dead was made in the ground, and the bottom carefully paved with flat stones. Flat stones or slabs of limestone and slaty sandstone were placed along the sides and at the head and foot of the grave. The body was then placed within this rude coffin, and with it were deposited vases, small ornaments, pearls, beads, bands of wampum, large sea-shells, idols, warlike implements, stone hatchets and chisels, spear-heads, arrow-heads, stone swords, paint bowls, and even copper ornaments. The top of the grave was then covered with one or more flat stones. The upper slabs covering the graves were generally on a level with the surface of the ground. In some localities, however,

and especially in the most carefully constructed burial mounds, the graves were covered with a foot of earth or more, and in order to discover their location I was obliged to sink an iron rod into the loose soil until it struck the lid of the coffin. These burial mounds will be more fully described hereafter.

In some localities the sides of the tombs stood up above the surface from four to eight inches, as in the case of the stone graves described by Bartram. When a number of coffins were placed together, the side stones of the first frequently constituted the side of the second, and so on. Many of the stone graves are quite small, and capable of containing only the body of a *new-born* infant. These small graves were constructed with great care, and the sides, bottom, and top were formed of much thinner and smoother slabs than the graves of the adults. Many of the short, square graves, not more than eighteen inches or two feet in length, contain the bones of adults piled together, the crania being surrounded by or resting upon the arm and leg bones. This class of graves containing the bones of adults packed in a small space were probably constructed at the general burying festival, or contained the remains of the dead which had been transported from a distance. This view is sustained by the fact that in some of these graves I have found portions of two or more skeletons, sometimes two crania, and in others only a portion of a single skeleton.

It has been frequently asserted that the smaller graves contained the bones of *small adults* or *pigmies.* It has been further asserted that *entire cemeteries were composed of these small graves.*

The determination of the true character of the remains in these graves appeared to me to be of much interest, and I opened a large number of them in various ancient cemeteries, with the following results:—

1st. Some of the small graves contained nothing more than the bones of small animals and birds. The animals appeared to be a species of dog, also rabbits, raccoons, and opossums. The bones of the birds appeared to belong to the wild turkey, eagle, owl, hawk, and wild duck. Occasionally bones of these animals and birds were found in the large graves along with the bones of human adults.

2d. The small graves were frequently in groups, in the neighborhood of the large graves. The most carefully constructed burial mounds which appeared to contain the remains of royal families, generally revealed not more than two or three small graves, inclosing the remains of children *who had died during the process of dentition.*

3d. All the crania and bones which I examined in the small graves were, beyond controversy, those of children. The bones of the crania were so soft and thin that, after numerous trials, I was able to obtain only a single tolerable specimen. I was enabled, in many cases, however, by exercising much care in removing the earth, to ascertain the exact outline of the crania; as, however, they contained earth within, the attempt to lift them was followed by the breaking of the different bones into fragments. In all cases the crania were much flattened at the occiput, giving an exceedingly short longitudinal or occipito-frontal diameter, and a very long transverse or parietal diameter. This fact was determined by removing the earth with great care from around the crania, and examining them *in situ* in the

small graves before the attempt was made to remove them. As soon as the effort was made to remove them, the component bones separated at the sutures, and crumbled during the effort of lifting them out of the grave.

4th. The conclusive demonstration of the character of these remains lay in the *existence of both sets of teeth in the upper and lower jaw-bones, thus proving that they belonged to children or infants who had probably died during the period of dentition.*

Haywood, in his "Natural and Aboriginal History of Tennessee," devotes an entire section to the consideration of "*the ancient pigmies.*" The following is a synopsis of the facts stated by him in reference to this matter:—

A number of small skeletons were discovered a few miles from Sparta, Tennessee, in White County, an account of which was given by a Mr. Lane. The graves were about two feet in length, fourteen inches broad, and sixteen inches deep. These extend promiscuously throughout the farm of Mr. Lane, and in a large and closely connected burying-ground in the vicinity; there were others of the same description four miles south of Sparta, and it is said that hundreds of them might be found throughout the locality. There is no discernible rising on the surface of the earth on account of these graves, and they were found by sinking an iron rod into the ground until it struck the covering stone of the coffins. These graves generally contained small skeletons of human beings so much decayed that they could not be removed without being broken to pieces, or crumbling to dust. There were also found in them remnants of pottery and shells, as well as bones of animals. In one the skeleton lay on its back, with its feet drawn up, so as to raise the knees about four inches above the bottom of the grave; the head was also so raised as to cause the chin to lie upon the breast. This skeleton, carefully measured as it lay, was found to be, from a little below the ankle-joints to the top of the skull, two feet ten inches, making a proper allowance for the bending of the legs and the inclination of the head.

But one grave of the whole series was of a larger size and of a different form, being constructed after the manner of a coffin, fourteen inches broad at the head, twenty-two at the elbow, and ten at the foot; the sides and ends were of flag-stones, the same as those of the small graves. In this grave lay a skeleton five feet five inches long, the head to the west and the feet to the east. This skeleton was carefully uncovered without displacing any of the bones until the whole was exposed to view. Its mouth was wide open and contained a full set of teeth, the arms lay along the side, the ribs were broad and flat and more than double the size of those of the Pigmies. The head was also larger, the eyes wider apart, and the forehead higher than those in the smaller graves. The skull was perfect, with the exception of a fracture on the right cheek-bone; and a quantity of fine, straight hair adhered to it, which was of a bright gray color. No vessels or trinkets were found with this skeleton, and, from the great dissimilarity in the shape of its head and the size and form of the bones, it seemed to belong to a different tribe from the skeletons of the smaller graves.

From the great number of small graves found here, says Mr. Lane, all of the same description, and, among them all, but one being of a large size, it seems to indicate that there was, in ancient times, a race of people whose height was from two feet ten to three feet.

As old as the hair of the large skeleton seemed to be, there was not a tooth lost or unsound in either jaw, but one of the Pigmy heads had in the upper jaw a decayed tooth, whence it was conjectured that the person to whom this skeleton belonged was older than the former.

Specimens of the contents of these graves were submitted to medical gentlemen of Nashville, and various opinions were entertained as to the maturity or infancy of the smaller skeletons. The prevailing one seemed to be that these skeletons belonged to adult persons of small size, and also that some of the bones found were those of animals.—*Natural and Aboriginal History of Tennessee*, pp. 200–209.

In a note added to this description, Haywood records the fact that, in the neighborhood of St. Louis, Mo., small stone graves exist, as in Tennessee; and that, in certain ancient mounds near Lake Erie, skeletons of people of small stature are found, pp. 360, 361.

The preceding account of the pigmies of Tennessee is an example of how a wild hypothesis may, from the love of the marvellous, be founded upon a few hasty and imperfect observations. This tradition had been repeated so often that it was generally believed in the State at the time of my exploration, and I have, therefore, given the facts upon which it appears originally to have been founded. It is evident that these facts do not establish the existence of a race of small people (*pigmies*) in former times; the decayed state of the bones, and especially of those of the crania in the graves opened by Mr. Lane and others, was almost conclusive proof that they belonged to the skeletons of children. On the other hand, the skeletons of adults remain to this day in a good state of preservation in the stone graves. Even Haywood, who was anxious to make out a special case, represents the testimony of the physicians of Nashville as doubtful; and one of the crania or cranial bones sent was evidently that of a child. The color of the hair could not determine this question, as it had been buried in the moist earth for more than a century at the time of these examinations.

I myself have examined the bones from fifteen different aboriginal cemeteries, and have never discovered a single skeleton of an adult of unusually small stature. I have examined graves of all sizes, from those just large enough for the still-born infant to those enclosing skeletons more than seven feet in length, but, in every case, the small graves contained either the skeletons of children or the bones of full-grown adults, which had been deposited in the square stone coffins, after they had been separated from the flesh and disjointed.

The experience of my lamented and honored friend, the late Col. A. W. Putnam, was in like manner against the existence of a race of pigmies in former times. All the small stone graves which he opened contained the bones of children, as was evident from the state of the teeth. The testimony of Dr. Troost, the learned geologist of Tennessee, was also to the same effect. In his "Account of some Ancient Remains in Tennessee," after mentioning six extensive burying-grounds in a circle of about ten miles diameter around Nashville, and after stating that the burying-grounds on the banks of the Cumberland, in the suburbs of the city of Nashville, to which we have alluded, extended at that time, 1844, about a mile in length, almost to Mr. Macgavoc's, and that the stone coffins were constructed in such a manner that each corpse was separated by a single stone from the next, he says:—

"Some of our inhabitants consider these places as battle grounds, and the graves as the graves of the slain. The Indians do not bury their fallen foes, but leave them to be devoured by the wolf, the cougar, and other carnivorous animals; their own slain they carry to their towns, or hang up in mats upon trees. They have afterwards burying festivals, when they collect the bones thus preserved, and bury them; and thus, in my opinion, originated those small graves which are attributed, but I believe erroneously, to pigmies. I have opened numbers of these small graves and have found them filled with a parcel of mouldered bones, which, judging from some fragments I have seen, belonged to common-sized men. In one of them I found amongst the mouldered relics two occipital bones; of course, here was a mere mixture of the parts of more than one skeleton. These bones lay without any order. This is not the case with the relics of the old extinct race, whose graves are much larger, the skeletons being generally stretched out. Nevertheless, I have found them also more or less doubled up, so that the part of the thigh-bone next to the knee lay near the lower jaw; in other graves I have found the head with the face downwards; in fact, they seem to

have buried their dead in every position. The present Indians generally bury their dead doubled up, the thigh against the breast."[1]

Owing to the nature of my professional duties, and my official relations as Health Officer of Nashville, Tennessee, I was unable to examine the graves at Sparta in person, although desiring greatly to do so; in order, however, to settle this question, I addressed letters to the most prominent physicians and citizens of Sparta and White County, requesting them to open the graves and to forward the remains to me in Nashville.

I select the following from the replies received in response to this request. The first is from Drs. E. L. Gardenhire, of Sparta, and J. Barnes, of Livingston, Tennessee:—

"We have to say that we know of no graves or skeletal remains of an extinct race in White County, Tennessee. About eight miles north of Sparta, in a beautiful fertile valley of Cherry Creek, there is a very large mound, but whether there are Indian graves or bones near it we do not know. We have not heard of anything of the kind.

'Twenty-one miles north of Livingston, in Overton County, near Maj. John F. Jewett's residence, we learned that there is a cave in which there is a large deposit of human bones. Whether they are of the ordinary size or not we have not learned, but the fact that they are there is well authenticated.

"The writer of this, E. L. Gardenhire, of Sparta, Tennessee, twenty-five years ago, dug into a large mound near said cave, and found human teeth in a good state of preservation. He found, also, parts of the bones of a human cranium. The latter, however, was soon reduced to powder by exposure to the air.

"At Floyd's Lick, in Jackson County, Tennessee, thirty miles southwest of this place, are the remains of an ancient fortification plainly to be seen. It seems to have consisted of earthworks, with small mounds at the corners, and a much larger mound in the centre. Near the fortification are numerous graves. They are uniformly about four feet in length and two and a half feet wide. The graves are about four feet deep, and consist of broad, smooth, slate stones, pretty nicely cut out and fitted together in the excavations so as to form a stone box. The writer opened one of them twenty years ago, found some bones much decayed, a small earthen vessel or pot, and some flint arrowheads. The bones were so much decayed that nothing of their size or shape could be ascertained.

"The writer was in company with Dr. Z. R. Chowning, near his residence, many years ago, and found a considerable quantity of human bones in a tolerable state of preservation. It is remembered that we found thigh and leg bones and crania. Upon measurement the thigh and leg bones were uniformly larger than the bones of the present race of men. The locality of the bones was not like the usual burial places. We supposed, therefore, that anciently a battle may have been fought there, and the bones of the slain may have been thus deposited. We remarked nothing very peculiar in the size of the crania found.

"Dr. Zachariah R. Chowning lives thirteen miles northwest of Livingston. This is all the information we can now give you." * * *

The next is from Dr. Jas. H. Snodgrass, of Sparta, Tennessee.

"There are many of these graves in our country, in the vicinity of rich borders of land. The two large pieces of carved shell seem, from the position in which they were found, to have been worn upon the breast, and the little balls as ear-ornaments. The head of the femur is forwarded to show you the condition of the bones. The small stone was picked up in the vicinity. There is a small earthen pot, holding about half a gallon, in every grave, but when exposed to the air a few minutes it crumbles upon the slightest touch. These vessels are marked with a great deal of taste." * * *

---

[1] Transactions of the American Ethnological Society, vol. i. pp. 358, 359.

In a subsequent letter Mr. Snodgrass states that "all the graves examined inside of a certain entrenchment are much smaller than those immediately outside. Those inside are about eighteen inches square, those outside are eighteen inches by thirty inches; in all, the dead are buried in the same position."

I examined carefully the bones from the small graves near Sparta, sent me by Mr. Snodgrass, and found them to be the remains of infants and children during the period of dentition. The age of the individuals to whom the remains had belonged was absolutely demonstrated by the existence of two sets of teeth, the first and the permanent, both in the upper and the lower jaw-bones.

The shell ornaments lying upon the breasts were similar in all respects to those from other parts of Tennessee, having the figure of the sun carved upon them. The pottery was composed of the same materials (crushed river shells and clay) as the vases exhumed from the stone graves and mounds at Nashville, Franklin, Old Town, and many other places.

It was evident, from all the testimony that I could gather, that the graves around Sparta, which had furnished Haywood with the materials for the construction of his romance of the ancient race of pigmies, inclosed the remains of individuals of all ages from infancy upwards, and that whilst the infants or children were frequently buried in groups apart from the graves of the adults, there was nothing peculiar about their organic remains. The fact that the large and small graves in some cemeteries are intermingled, and that both varieties occur all through this section of country, without any apparent division into distinct districts, sustains the view that all the stone graves were constructed by the same people, who were large and well formed, and that the hypothesis of the existence of a race of *pigmies* in Tennessee in ancient times is a mere figment of the imagination.

As far as our knowledge extends, the mode of burial in carefully constructed stone coffins, practised by the aborigines of Tennessee, was different from that in use among many Indian tribes of the present day; and an inquiry into the different modes of sepulture, practised by the aborigines of America, is of importance in its bearing upon the history of the former inhabitants of Tennessee.

At the time of the invasion of De Soto, more than three centuries ago, certain tribes or nations of the Southern Indians are described as inclosing the remains of the dead in coffins, in which were placed pearls, shell ornaments, and idols; and these coffins were deposited in special cemeteries and temples.

Hernando De Soto, Luis Fernandez De Bimeda, the *gentleman* of Elvas, and the Inca, Garcilasso De la Vega, have recorded the singular history of the *Christian*, *John Ortiz*, who came to Florida with Pamphilo de Narvaez, and was captured by the Indian Chief Ucita and held in captivity for twelve years, until released by De Soto. The life of John Ortiz, who had been condemned by Ucita to be bound hand and foot, upon a raft erected upon four stakes, and burned to death, was saved, like that of the celebrated John Smith, the founder of Virginia, by the earnest intercessions of the daughter of the Indian King. John Ortiz was placed in charge of the temple or burial mound to keep away the wolves, which often carried away the corpses from the coffins. The bodies of the dead were said to have been deposited in wooden boxes covered with boards, without any fastening except a stone

or a log of wood laid upon the top. In the graves of one of the chief towns in the province of Cutifachiqui, the Spaniards found fourteen rows of pearls (weighing three hundred and ninety-two pounds), and little images of men and birds made of them. These facts indicate that the mode of burial practised by the aborigines of Tennessee dates back more than three centuries, and was employed by the Indians inhabiting, at the time of the expedition of De Soto, that portion of the country which is now included in the States of Florida, Alabama, Georgia, and Tennessee.

Lafitau, in his great work, "Mœurs des Sauvages Amériquains, comparées aux Mœurs des Premiers Temps," quotes a lengthy and elaborate description by Pere de Brebeus, of the mode of burial practised in early times by the Hurons and Iroquois The bodies of the chief men were, in former times, subjected to a process of embalming. The skin was removed and oiled; the flesh was removed from the bones, and the skeleton placed within the skin, which was then stuffed with sand and laid upon a scaffold. The flesh was smoked, dried, and packed in blankets, and placed at the feet. This mode appears to have been practised only in the case of the most distinguished chiefs. The Illinois are said to have buried the bodies of the women, but they wrapped the bodies of the men in skins and hung them upon trees. When the Hurons and Iroquois buried bodies in the ground, they dug a circular hole, which was carefully lined with bark, and the body wrapped in skins was placed in the grave, with a vessel containing water or food at the side, together with ornaments, pipes, and weapons of war. The mouth of the grave was then covered with bark and earth. Pere de Brebeus has also described at length the grand burial festival observed by the Iroquois at long intervals of time, varying from eight to twelve years. The dead bodies and bones of the nation or tribe were collected and deposited in a large grave, into which large numbers of utensils, hatchets, pipes, etc., were thrown, and the whole covered with bark and earth. Various ceremonies were performed during this grand collection and burial of the deceased.[1]

Narvaez, upon first landing in Florida, found a temple in which were chests, each containing a dead body covered with painted deer skins.

Jacob le Moyne,[2] who accompanied Rénaud de Laudouniére in his second voyage to Florida, says, in his work on the Indians, that when a chief or prophet died, upon the St. John's, he was placed in the ground, and a small mound of conical form was erected over him. The base of this mound was surrounded with arrows stuck in regular order. Some of the tribe sat and others kneeled around it, and continued to weep and howl for the space of three nights. Chosen women next visited the mound for a long time every morning at the break of day, at noon, and at night.

The description given by Joutel of the mode of burial practised by the Chouanons, although presenting some features in common with that of the ancient inhabitants of Tennessee, was most probably drawn up from that portion of the nation which had settled with the Illinois. As this author does not mention the use of stone slabs in the construction of their tombs, it is probable that the country in which

---

[1] Mœurs des Sauvages Amériquains, etc., par C. P. Lafitau, tome second, pp. 386–458.

[2] As quoted by Pickett, History of Alabama, vol. i. p. 72.

they then lived was destitute of this material. In fact, the mode of burial employed by the inhabitants of Tennessee was only practicable in a region of country abounding in flat rocks. Large portions of the Southern and Western States are without slate or thin flat rocks, and hence it is impossible to determine by their stone graves the precise limits of the country formerly inhabited by the aborigines of Tennessee. It is certain, however, that these stone graves are found over a tract of country extending from the head waters of the Savannah River nearly to the shores of Lake Erie.

The mode of burial practised among the Illinois is stated by Mr. T. Rale, and deserves to be mentioned. "Their custom," says Rale, "is not to bury the dead, but to wrap them in skins, and to attach them by the head and feet to the tops of trees."[1]

According to Mr. Lewis H. Morgan, different customs have prevailed among the Iroquois in relation to the mode of burial. At one period they buried the dead in a sitting posture, with the face to the east. Skeletons are still found in this position, in various parts of the State of New York, with a gun-barrel resting against the shoulder, thus fixing the period of their sepulture subsequently to the first intercourse of this people with the whites. Another and more extraordinary mode of burial prevailed among them. The body of the deceased was exposed upon a bark scaffolding, erected upon poles or secured upon the limbs of trees, where it was left to waste to a skeleton. After this had been effected by the process of decomposition in the open air, the bones were removed either to the former home of the deceased or to a small bark house by its side prepared for their reception. In this manner the skeletons of the whole family were preserved from generation to generation by the affection of the living. After the lapse of a number of years, or in a season of public insecurity, or on the eve of abandoning a settlement, it was customary to collect these skeletons from the whole community around, and to consign them to a common resting-place. To this custom, which was not confined to the Iroquois, are, doubtless, to be ascribed the barrows and bone mounds which have been found in such numbers in various parts of the country. On opening these mounds the skeletons are usually found arranged in horizontal layers constituting a conical pyramid, those in each layer radiating from a common centre. In other cases they are found placed promiscuously. There were Senecas residing at Tonawanda and Cattaraugus, in 1851, who remember having seen, about sixty years before, at the latter place, these bark scaffoldings on which bodies were exposed. The custom still prevails among the Sioux upon the Upper Mississippi, and among some of the tribes in the far west. The notions entertained by the Iroquois as to the state of the soul when disembodied were vague and diversified; but they all agree that, on the journey, it required the same things as were of use while it dwelt in the body. They, therefore, deposited beside the deceased his bow and arrows, tobacco and pipe, and necessary food for the journey. They also painted his face and dressed his body in its best apparel. A fire was built upon the grave at night to enable the spirit to prepare its food.[2]

---

[1] See his Letters in Kip's Jesuit Missions, p. 38.

[2] League of the Iroquois, pp. 172–175.

Captain Bernard Romans says that the Chicasaws bury their dead almost the moment the breath is out of the body, in the very spot under the couch in which the deceased died, and the nearest relatives mourn over it with woful lamentations. The mourning continues every evening and morning during a whole year.[1] When one of the Chactaws dies, a stage is erected, and the corpse is laid on it and covered with a bear skin; if it be that of a man of note, it is decorated, and the poles painted red with vermilion and bear's oil; if that of a child, it is put upon stakes, set across. The relatives then come and weep, asking many questions of the corpse, such as, why he left them? did not his wife serve him well? was he not contented with his children? had he not corn enough? did not his land produce sufficient of everything? was he afraid of his enemies? etc., and this accompanied by loud howlings; the women are there constantly, and sometimes with the corrupted air and heat of the sun, faint, so as to oblige the by-standers to carry them home; the men also mourn in the same manner, but in the night or at other times when they are least likely to be discovered. The stage is fenced round with poles; it remains thus a certain time, but not a fixed period; this is sometimes extended to three or four months, but seldom more than half that time. Old men, who wear very long nails on the thumb, fore, and middle finger of each hand, as a distinguishing badge, constantly travel through the nation, that one of them may acquaint those concerned, of the expiration of this period, which is according to their own fancy; the day being come, the friends and relatives assemble near the stage, a fire is made, and the venerable operator, after the body is taken down, with his nails tears the remaining flesh off the bones, and throws it with the entrails into the fire, where it is consumed; then he scrapes the bones and burns the scrapings. The head being painted red with vermilion is put, with the rest of the bones, into a chest (which for a chief is also made red), and deposited in the loft of a hut built for that purpose, and called the bone-house; each town has one of these. After remaining here one year or thereabouts, if the deceased was a man of any note, they take the chest down, and in an assembly of relatives and friends, they weep once more over him, refresh the color of the head, repaint the box, and then consign him to lasting oblivion. An enemy or any one who commits suicide is buried under the earth as one to be directly forgotten, and unworthy of the above-mentioned obsequies and mourning.[2]

Romans remarks upon this strange treatment of the dead, that Apollonius Rhodius mentions a similar custom of the inhabitants of Colchis near Pontus; Ives in his voyage relates a like custom of the ancient Peruvians; and we find again in Hawkesworth's voyage that the people of Otaheite perform their obsequies in a manner little or nothing different from that of the Chactaws.

The dead of the Muscokees or Creeks, according to Bernard Romans, are buried in a sitting posture, and they are furnished with a musket, powder and ball, a hatchet, a pipe, some tobacco, a club, a bow and arrows, a looking glass, some

---

[1] Concise Natural History of East and West Florida, p. 71.
[2] Natural History of East and West Florida, pp. 89–90.

vermilion, and other articles, in order to come well provided into the world of spirits.

According to the same author, the Arkansas, Kansas, Kappas or Kwappas, bury their dead, like the Creeks, with the addition of tying the head down to the knees.

William Bartram says that the Muscogulges bury their deceased in the earth. They dig a deep square pit under the cabin or couch on which the deceased lay in his house, lining the grave with cypress bark. Into this they place the corpse in a sitting posture, as if it were alive, depositing with him his gun, tomahawk, pipe, and such other matters as he held of the greatest value in his lifetime. His eldest wife, or queen dowager, has the first choice of his possessions, and the remaining effects are divided among his other wives and his children.

The description of the burial customs of the Chactaws by Bartram is as follows, and agrees in the main with that of Captain Romans, but contains several important additions: "The Chactaws pay their last duties and respects to the deceased in a very different manner from the Muscogulges. As soon as a person is dead, they erect a scaffold eighteen or twenty feet high, in a grove adjacent to the town, where they lay the corpse, lightly covered with a mantle; here it is suffered to remain, visited and protected by the friends and relatives, until the flesh becomes putrid; then undertakers, who make it their business, carefully strip the flesh from the bones, wash and cleanse them, and when dry and purified by the air, they are placed in a curiously wrought chest or coffin, fabricated of bones and splints, which is deposited in the bone-house, a building erected for that purpose in every town. When this house is full, a general solemn funeral takes place. Then the nearest kindred or friends of the deceased, on a day appointed, repair to the bone-house, take out the respective coffins, and following one another in order of seniority, the nearest relatives and connections accompanying their respective corpses, and the multitude following after them, all as one family, with united voice of alternate alleluyah and lamentation, slowly proceed to the place of general interments, where they place the coffins in order, forming a pyramid; and lastly they cover all over with earth, which raises a conical hill or mound. Then they return to town in the order of a solemn procession, concluding the day with a festival which is called the feast of the dead."[1]

James Adair, who was a trader with the Indians, and resided in their country for forty years, has given the following account of the burial of the dead by the Cherokees and Chactaws or Chokta.

"Except the Cheerake, only one instance of deviation from the ancient and general Indian custom (of burying articles with the body) occurs to me: which was that of *Malakeke*, the late famous chieftain of the Kow-wetah head war town of the lower part of the Muskohge Country, who bequeathed all he possessed to his real and adopted relations; being sensible that his effects would be much more useful to his living friends than to himself during his long sleep.

"The Cheerake of late years, by the reiterated pursuasion of the traders, have entirely left off the custom of burying effects with the dead body; the nearest of blood inherits them. They, and several

[1] Travels through North and South Carolina, Georgia, East and West Florida, pp. 515–16.

others of our Indian nations, used formerly to shoot all the live stock that belonged to the deceased, soon after the interment of the corpse; not that they might accompany and wait upon the dead, but from a narrow-hearted avaricious principle. When any of them die at a distance, if the company be not pursued by an enemy, they place the corpse on a scaffold, covered with notched logs to secure it from being torn by wild beasts or birds of prey. When they imagine the flesh is consumed, and the bones are thoroughly dried, they return to the place, bring them home, and inter them in a very solemn manner. They will not associate with us when we are burying any of our people who die in their land. And they are not willing we should join with them while they are performing this kindred duty to theirs. Upon which account, though I have lived among them in the raging time of the smallpox, even of the confluent sort, I never saw but one buried, who was a great favorite of the English, and chieftain of *Ooeasa*, as formerly described.

"Notwithstanding the North American Indians, like the South Americans, inter the whole riches of the deceased with him, and so make his corpse and the grave heirs of all, they never give them the least disturbance; even a blood-thirsty enemy will not despoil the dead. The grave proves an asylum, and a sure place of rest to the sleeping person, till at some certain time, according to their opinion, he rises again to inherit his favorite place; unless the covetous or curious hand of some foreigner should break through his sacred bounds. This custom of burying the dead person's treasures with him has entirely swallowed up their medals and other monuments of antiquity, without any probability of recovering them.

"The Indians use the same ceremonies over the bones of their dead as if they were covered with their former flesh. It is but a few days since I saw some return with the bones of nine of their people, who had been two months before killed by the enemy. They were tied in white deer skins separately; and when carried by the door of one of the houses of their family, they were laid down opposite to it, till the female relatives convened, with flowing hair, and wept over them for half an hour. Then they carried them home to their magazines of mortality, wept over them again, and buried them with the usual solemnities; putting their valuable effects in along with them. The chieftain carried twelve short sticks tied together, in the form of a polygon. The sticks were only peeled, without any paintings; but there were swans' feathers tied to each corner. They called that frame, Terukpe toboh, 'a white circle,' and placed it over the door, while the women were weeping over the bones.

"When any of the people die at home, they wash and anoint the corpse, and soon bring it out of doors, for fear of pollution; thence they place it opposite to the door, on the skins of wild beasts, in a sitting posture, as if looking into the door of the winter house, westward, sufficiently supported by all the movable goods of the deceased; after a short eulogium and space of mourning, they carry the body three times around the house in which it is to be interred, stopping half a minute each time, at the place where they began the circle, while the religious man of the deceased person's family, who goes before the hearse, says each time *Yàh*, short and with a bass voice, and then invokes on a tenor key, *Yu*, which, at the same time, is likewise sung by all the procession, as long as one breath allows. Again he strikes up, on a sharp treble key, the feminine note, *He*, which in like manner is taken up and continued by the rest; then all of them suddenly strike off in the solemn chorus and sacred invocation, by saying, in a low key, *Wàh;* which constitute the divine essential name *Yoh ewah.*

"After they had celebrated these funeral rites of the chieftain, they laid the corpse in its tomb, in a sitting posture, with its face towards the east, its head anointed with bear's oil, and its face painted red, but not streaked with black, because that is a constant emblem of war and death. He was dressed in his finest apparel, having his gun and pouch, and trusty hickory bow, with a young panther's skin full of arrows along side of him, and every other useful thing he had been possessed of. His tomb was clean inside, and covered with thick logs so as to bear several tiers of cypress bark and such a quantity of clay as would confine the putrid smell, and be on a level with the rest of the floor. They often sleep over these tombs together; which with the loud wailing of the women at the dusk of the evening and dawn of the day, on benches close by the tombs, awake the memory of their relations.

"The Choktahs having placed the dead on a scaffold stockaded round, at the distance of twelve yards from the house, opposite to the door, the whole family convene there at the beginning of the fourth moon after the interment, to lament and feast together. After wailing a while on the mourning

benches, which stand on the east side of the quadrangular tomb, they raise and bring out the corpse, and, while the feast is getting ready, a person whose office it is, and properly called the *bone-picker*, dissects it with his sharp-pointed knife. He continues till he has finished the task and scraped all the flesh from the bones. They then carefully place the bones in a kind of small chest, in their natural order, and proceed to strike up a song of lamentation, with various wailing tunes and notes; afterwards, they join as cheerfully in the funeral feast as if their kinsman was only taking his usual sleep. Having regaled themselves, they go along with those beloved relics of their dead, in solemn procession, lamenting with doleful notes, till they arrive at the bone-house, which stands in a solitary place, apart from the town; then they proceed around it, much after the manner of those who performed the obsequies of the Chikkasah chieftain already described, and deposit them alongside of those of his kindred, till in due time they are revived by Ishto hoollo Aba, that he may repossess his favorite place.

"These bone-houses are scaffolds raised on durable pitch-pine forked posts, in the form of a house covered on the top and open at both ends. I saw three of them in one of their towns, pretty near each other; the place seemed to be unfrequented; each house contained the bones of one tribe, separately, with the hieroglyphical figures of the family on each of the odd-shaped arks. They reckon it irreligious to mix the bones of a relative with those of a stranger, and much less will they thrust the body of their beloved kinsman into the tomb of an enemy. I observed a ladder fixed in the ground, opposite to the middle of the broadside of each of those dormitories of the dead, which was made only of a broad board. On the top was the carved image of a dove, with its wings stretched out and its head inclining down, as if earnestly viewing or watching over the bones of the dead. From the top of the ladder almost to the surface of the earth, there hung a chain of grape-vines, twisted together, in circular links.

"To perpetuate the memory of any remarkable warrior killed in the woods, every Indian traveller as he passes that way, throws a stone on the place. We often see in the woods innumerable heaps of small stones in those places, where, according to tradition, some of their distinguished people were either killed or buried, till the bones could be gathered. They then continue to increase with heap, as a lasting monument and honor to them, and an incentive to great actions. * * *

"Many of these heaps are to be seen in all parts of the continent of North America. Where stones could not be had, they raised hillocks or mounds of earth, wherein they carefully deposited the bones of their dead, which were placed either in earthen vessels or in a simple kind of arks or chests."[1]

The burial customs of the Natchez, who are said to have inhabited, in former times, the southwestern portion of the Mexican Empire, and who, on account of the wars with which they were continually harassed by neighboring Indians, wandered northeast and finally settled on the banks of the Mississippi, resembled those of the ancient Mexicans and Peruvians. The habitation of the great chief is described as standing upon an artificial mound, fronting a large square. The temple of the sun, in which a perpetual fire was preserved, was situated at the side of the cabin of the chief, fronting the east, and at the extremity of the square. It was oblong in form, forty feet in length and twenty in breadth, and within it were the bones of the deceased chiefs, contained in boxes and baskets. Lafitau, in his work on the "Manners of the American Savages," to which we have before referred, gives representations of the temple and ceremonies at the death of the chiefs (vol. i, p. 167, vol. ii, p. 410), as well as descriptions of their religious customs and belief.

Father le Petit, in his account of the Natchez Indians, has given the following description of the bloody and remarkable rites performed at the death of the suns, or chiefs:—

---

[1] The History of the American Indians, etc., pp. 177–185.

"The sun is the principal object of veneration to these people; as they cannot conceive of anything which can be above this heavenly body, nothing else appears to them more worthy of their homage. It is for the same reason that the great chief of this nation, who knows nothing on earth more dignified than himself, takes the title of *brother of the sun*, and the credulity of the people maintains him in the despotic authority which he claims. * * * When the great chief dies, they demolish his cabin, and then raise a new mound on which they build the cabin of him who is to replace him in this dignity. One of the principal articles of their religion, and particularly of the servants of the great chief, is that of honoring his funeral rites by dying with him, that they may go and serve him in the other world. In their blindness they willingly submit to this law, in the belief that in the train of their chief they will go to enjoy the greatest happiness.

"They first put on all their finery and repair to the place opposite the temple, where all the people are assembled. After having danced and sung a sufficient time, they place around their neck cords of buffalo hair with running knots, and immediately the ministers appointed for executions of this kind come forward to strangle them, recommending them to go and join their master, and to render to him in the other world, services, even more honorable than those which had occupied them in this. The principal servants of the great chief having been strangled in this way, they strip the flesh from their bones, particularly from their arms and thighs, and leave them to dry for two months in a kind of tomb, after which they take them out to be shut up in baskets, which are placed in the temple by the side of the bones of their master. As for the other servants, their relations carry them home with them, and bury them with their arms and clothes. The same ceremony is observed in like manner on the death of the brothers and sisters of the great chief. The women are always strangled to follow the latter, except when they have infants at the breast, in which case they continue to live for the purpose of nourishing them. And we often see many who endeavor to find nurses, or who themselves strangle their infants, so that they shall not lose the right of sacrificing themselves in the public place, according to the ordinary ceremonies, and as the law prescribes. * * *

"When one of these Indians dies, his relatives assemble and mourn his death during an entire day, when they array him in the most beautiful dresses, paint his face and hair, and ornament him with plumes, after which they convey him to the grave prepared for him, placing by his side, his arms, a kettle, and some provisions. For the space of a month, his relatives come at the dawn of day and at the beginning of the night to weep for half an hour at his grave. Each one names his degree of relationship. If he were the head of a family, the wife cries, 'My dear husband, oh! how I regret you!' The children cry, 'My dear father!' The others, 'My uncle!' 'My cousin!' etc. The nearest relations continue this ceremony for three months; they cut off their hair in sign of grief, they abstain from painting the body, and are never found at any assembly for festivity."[1]

Father Charlevoix, in his "Historical Journal," describes the obsequies of a female chief, as he had it from a traveller who was witness of them, and on whose sincerity he had good reason to depend. The husband of this woman not being noble, that is to say, of the family of the great chief, his eldest son strangled him, according to custom. They then cleared the cabin of all that it contained, and erected in it a kind of triumphal stage, on which the body of the deceased woman and that of her husband were placed. A moment afterwards they ranged around these carcasses twelve little children, which their parents had strangled by order of the eldest daughter of the woman chief, who succeeded to the dignity of her mother. This being done they erected in the public place fourteen scaffolds, adorned with branches of trees, and with clothes on which they had painted various figures. These scaffolds were designed for as many persons, who were to accompany the female chief into the other world. Their relatives were all around them. and esteemed as a great honor for their families, the permission which they had obtained to sacrifice

[1] Historical Collections of Louisiana, iii, p. 141–149.

themselves in this manner. They apply sometimes two years beforehand to secure this favor; and the persons who obtain it must themselves make the cord with which they are to be strangled.

They appear on their scaffolds dressed in their richest habits, each holding in his right hand a large shell. Their nearest relative stands on their right-hand side, holding under the left arm the cord which is to serve for the execution, and in the right hand a fighting club. From time to time these nearest relatives make the cry of death; and at this cry, the fourteen victims descend from their scaffolds, and go and dance together, in the middle of the open space which is before the temple, and before the cabin of the deceased chief. During some days preceding the execution, the victims are treated with great respect; they have each five servants, and their faces are painted red. Some add that during the eight days which precede their death, they wear a red ribbon round one of their legs; and that, during this time, everybody strives who shall be the first to feast them. However that may be, on the occasion now referred to, the fathers and mothers who had strangled their children, took them up in their hands and ranged themselves on both sides of the cabin. The fourteen persons who were also destined to die placed themselves in the same manner, and were followed by the relatives and friends of the deceased, all in mourning; that is to say, with their hair cut off. They made the air resound with such frightful cries that one would have said that all the devils in hell were come to howl in the place. This was followed by the dances of those who were to die, and by the songs of the relatives of the female chief.

At last they began the procession. The fathers and mothers who carried the dead children appeared first, marching two and two immediately before the bier, on which was the body of the female chief carried by four men on their shoulders. All the others came after in the same order as the first. At every ten paces the fathers and mothers let the children fall upon the ground. Those who carried the bier walked upon them; so that, when the procession arrived at the temple, these little bodies were all crushed.

While they were burying the body of the female chief in the temple, they undressed the fourteen persons who were to die. They made them sit on the ground before the door, each having two savages by him, one of whom sat on his knees, and the other held his arms behind. Then they put a cord about his neck and covered his head with a roebuck's skin. They made him swallow three pills of tobacco, and drink a cup of water; the relations of the female chief then drew the two ends of the cord, singing till he was strangled; after which they threw all the carcasses into the same pit, which they covered with earth. When the great chief dies, if his nurse is living, she must die also.[1]

John Lawson relates, that when one dies among the Santee Indians, who were governed by a despotic ruler, a mole or pyramid of earth is raised, the surface thereof being worked very smooth and even, sometimes higher or lower, according to the dignity of the person whose monument it is. On the top of

---

[1] Journal d'un Voyage fait par ordre du Roi dans l'Amérique Septentrionale, adressé à Madame la Duchesse de Lesdiguières, par le P. De Charlevoix, Tome Sixième. See also Historical Collections of Louisiana, Part iii, pp. 163–5.

this is an awning, made ridge-ways, like the roof of a house, and is supported by nine stakes or small posts, the grave being six or eight feet in length and four feet in breadth; about it are hung gourds, feathers, and other similar trophies, placed there by the dead man's relatives. As soon as the person is dead, they lay the corpse upon a piece of bark in the sun, seasoning or embalming it with a small root beaten to powder, which appears as red as vermilion; the same is mixed with bear's oil, to beautify the hair and preserve their heads from vermin, which is plentiful in these parts of America. After the carcass has lain a day or two in the sun, they place it upon crotches, cut of a sufficient length for its support from the earth; then they anoint it all over with the fore-mentioned powder of beaten root and bear's oil. When this is done, they cover it very carefully over with bark of the pine or cypress tree, to prevent any rain from falling upon it, sweeping the ground very clean all about it. One of his nearest of kin brings all the temporal estate the deceased was possessed of at the time of his death, such as guns, bows, arrows, beads, feathers, match-coat, etc. This relative is the chief mourner, being clad in moss, and having a stick in his hand, keeping up a mournful ditty for three or four days, his face being black with the smoke of pitch pine mingled with bear's oil. All the while he tells the dead man's relatives and the rest of the spectators, who the dead person was, and of the great feats he performed in his lifetime; all the discourse tending to the praise of the deceased. As soon as the flesh will separate from the bone, they take it off and burn it, making all the bones very clean; they then anoint them with the ingredient aforesaid, wrapping up the skull very carefully in a cloth artificially woven of "*'possum's hair.*" The bones they carefully preserve in a wooden box, every year oiling and cleansing them. By these means they preserve them for many ages, so that you may see an Indian in possession of the bones of his grandfather, or of some of his relatives of a greater antiquity. The Indians have other sorts of tombs, as when one is slain: in that very place, they make a heap of stones (sticks where stones are not to be found); to this memorial, every Indian that passes by adds a stone, to augment the heap, out of respect to the deceased hero.[1]

In his detailed account of the Indians of North Carolina, Lawson adds several particulars, illustrating more fully their mode of burial. The dead body is wrapped in mats made of rushes or cane, and these coverings are surrounded with a long web of woven rods or hollow canes, which constitutes the coffin, and which is wound round the body several times, and tied fast at both ends, making a very decent appearance. After certain ceremonies and the rehearsal of the good deeds and possessions of the deceased, the body is borne to the grave, which is about six feet deep and eight feet long, having at each end (that is, at the head and foot), a light-wood or pitch-pine fork, driven into the ground, close to the grave, and designed to support the ridge pole. Before the corpse is laid in the grave, they cover the bottom with two or three thicknesses of the bark of trees; then they let down the corpse with two of the straps with which the Indians carry their burdens; a pole is then placed over the grave, the ends resting in the two forks,

[1] A New Voyage to Carolina, etc., 1709, pp. 21–22.

and having provided a great many pieces of pitch-pine logs, about two feet and a half long, they plant them on the sides of the grave, with the upper ends together, so that they resemble the roof of a house. This structure is covered with bark, and the earth that came out of the grave is thrown on and beaten down very firmly. By this means the dead body lies, as it were, in a vault, nothing touching it. Lawson says that, when he saw this mode of burial, he was greatly pleased with it, esteeming it very decent and pretty, as he had seen a great many Christians buried without the tenth part of the ceremony. When the flesh has rotted and mouldered from the bone, they take up the skeleton, clean the bones, and then join them together; afterwards, they wrap them in pure white dressed deer-skins, and lay them amongst their grandees and kings in the *Quiogozon*, which is their *Royal Tomb*, or burial place of their kings and war captains. This is a very large magnificent cabin, raised at the general charge of the nation, and maintained in a state of repair and neatness. About seven feet from the ground is a floor or loft, on which lie all their princes and great men that have died for several hundred years, all attired in the dress previously described. The bones of no person are allowed to lie here or to be thus dressed unless the relatives give a large sum of money to the rulers for their admittance. If they remove ever so far, to live in a distant country, they never fail to take all these bones along with them, though the tediousness of their short daily marches keeps them a long time on their journey. They are taught to regard this *Quiogozon* with all the veneration and respect that is possible for such a people, and they would rather lose all they possess than have any violence or injury offered thereto. Lawson also states that the tribes of Indians in Carolina differ somewhat among themselves in their burials; yet they all agree in their mourning, since they appear every night at the sepulchre and howl and weep in a very dismal manner, having their faces daubed over with light-wood soot (which is the same as lamp-black) and bear's oil. The women are never honored with these ceremonies after death.[1]

According to Catlin, the Mandan Indians never bury the dead, but place the bodies on slight scaffolds, just above the reach of human hands and out of the way of wolves and dogs; and they are then left to moulder and decay. Whenever a person dies in one of the Mandan villages, the customary honors are immediately paid to his remains. The body is dressed in its best attire, painted, oiled, feasted, and supplied with bow and quiver, shield, pipe and tobacco, knife, flint and steel, and provisions enough to last a few days on the journey which is to be performed; a fresh buffalo skin is wrapped around the body, tightly wound from head to foot with thongs of raw-hide. Then other robes are soaked in water till they are quite soft and elastic, and are also bandaged tightly around the body in the same manner, and tied fast with thongs, which are wound with great care and exactness, so as to exclude the action of the air from all parts of the corpse. There is then a separate scaffold erected for it, constructed of four upright posts, and on the top of these are small poles passing around from one post to another. Across these

[1] Loc. cit., pp. 180–183.

a number of willow rods are placed, just strong enough to support the body, which is laid upon them, on its back, with its feet carefully turned towards the rising sun. A great number of these bodies are to be seen, arranged exactly in a similar manner; but, in some instances, the remains of a chief or of a medicine man may have a few yards of scarlet or blue cloth spread over them as a mark of public respect and esteem. Hundreds of these bodies repose in this manner at these places, which the Indians call "*the villages of the dead.*" Every day in the year, fathers, mothers, wives, and children may be seen lying under the scaffolds, prostrated upon the ground with their faces in the dust, howling forth incessantly the most piteous and heart-broken cries and lamentations, tearing their hair, cutting their flesh with sharp knives, and doing other penance to appease the spirits of the dead, whose departure they attribute to some sin or omission of their own, for which they sometimes inflict the most excruciating self-torture. When the scaffolds on which the bodies have rested decay and fall to the ground, the nearest relatives, having buried the rest of the bones, take the skulls, which are perfectly bleached and purified, and place them in circles of a hundred or more, upon the prairie, at equal distances, about eight or nine inches from one another, with the faces all looking to the centre; here they are religiously protected and preserved in their precise positions from year to year, as objects of religious and affectionate veneration. There are often several of these circles, or *Golgothas*, together, twenty or thirty feet in diameter, and in the centre of each is a small mound three feet high, on which uniformly rest two skulls of buffalos (a male and a female). In the centre of the little mound is erected a *medicine pole*, about twenty feet high, supporting many articles of mystery and superstition, which were supposed to have the power of guarding this sacred arrangement. Each one of these skulls is placed upon a bunch of wild sage, which has been pulled and placed under it; and each one knows the skull of a relative by some mark or resemblance, as they are daily visited and have vessels filled with food set before them. When the bunches of wild sage decay, they are carefully renewed. There is scarcely an hour, on a pleasant day, in which a woman may not be seen sitting or lying by the skull of her child or husband, talking to it in the most pleasant and endearing language.[1]

According to this author the Omahas deposit their dead in the trunks and in the branches of trees, enveloped in skins, and suspend a wooden dish near the head of the corpse; probably for enabling it to dip up water to quench its thirst on the long journey, upon which they one and all expect to enter after death. These corpses are so numerous along the banks of the river, that in some places a dozen or more of them may be seen at one view.

The Sioux often deposit their dead in trees and on scaffolds, but most generally bury them on the tops of bluffs or near the villages, where they often split out staves and drive them into the ground, around the grave, to protect it from dogs and wild animals.

---

[1] Catlin's North American Indians, vol. i, pp. 89–91.

Catlin gives, in his second volume (pp. 5–6), an interesting account of the grave of *Black Bird*, a famous chief of the O-ma-haws, on the Missouri River, about twelve hundred miles above St. Louis. The elevated bluff on which this grave is located may be distinguished for several leagues in different directions. On his return from Washington, Black Bird died near this spot from smallpox; and, in the last moments of life, made the request that his body should be dressed in full costume, mounted upon his favorite horse, and buried upon the pinnacle of this commanding bluff, the extensive and beautiful view from which had so often delighted him during life. In the presence of the whole nation, the dead chief was placed astride his noble white steed, with his bow in his hand, and his shield and quiver slung on his back. His pipe, his flint and steel, his tinder to light his pipe by the way, his medicine bag, and a supply of dried meat were furnished him. His tobacco pouch was replenished to last him through his journey to the beautiful hunting grounds of his fathers. The turf was brought and placed around the feet and legs of the horse, and gradually piled up, until it reached the sides of the unsuspecting animal, and covered the body and head, and even the beautiful eagle-feathered plume of the valliant rider. This mound, which is covered with a green turf, and has a cedar planted in the centre, can be seen at a distance of fifteen miles by the voyager, and forms for him a familiar and useful land-mark.

Clavigero has given, in the second volume of his "History of Mexico," an interesting description of the funeral rites and sepulchres of the Mexicans. However superstitious the Mexicans were in other matters, in the rites which they observed at funerals they exceeded themselves. As soon as any person died, certain masters of funeral ceremonies were called, who were generally men advanced in years. They cut a number of pieces of paper, with which they dressed the dead body, and took a cup of water, with which they sprinkled the head, saying, "that was the water used in the time of their life." They then dressed it in a clothing suitable to the rank, the wealth, and the circumstances attending the death of the party. If the deceased had been a warrior, they clothed him in the habit of Huitzilopochtli; if a merchant, in that of Jacateuctli; if an artist, in that of the protecting god of his art or trade. One who had been drowned was dressed in the habit of Tlaloc; one who had been executed for adultery, in that of Tlazolteotl; and a drunkard in the habit of Tezcatzoncatl, god of wine. In short, as Gomara has well observed, they wore more garments after they were dead than while they were living.

When they had arrayed the dead, they gave him a jug of water, which was to serve on the journey to the other world, and also at different times, pieces of paper, mentioning the use of each. On offering the first piece to the dead, they said: "By *means of this you will pass without danger between the two mountains which fight against each other.*" With the second they said: "By *means of this you will walk without obstruction along the road which is defended by the great serpent.*" With the third: "By *this you will go securely through the place where there is the crocodile* Xochitonal." The fourth was a safe passport through the eight deserts; the fifth through the eight hills; and the sixth was given in order

to pass without hurt through the sharp wind; for they pretended that it was necessary to pass a place called Itzehecajan, where a wind blew so violently as to tear up rocks, and so sharply that it cut like a knife; on which account they burned all the clothing which the deceased had worn during life, his arms and some household goods, in order that the heat of this fire might defend him from the cold of that terrible wind.

One of the chief ceremonies at funerals was the killing a *techichi*, a domestic quadruped resembling a dog, to accompany the deceased. They fixed a string about its neck, believing that necessary to enable it to pass the deep river Chiuhnahuapan, or New Waters. They buried the *techichi* or burned it along with the body of its master, according to the kind of death which he died. While the masters of the ceremonies were lighting up the fire in which the body was to be burned, the other priests kept singing in a melancholy strain. After burning the body, they gathered the ashes in an earthen vase, among which, according to the circumstances of the deceased, they put a gem of more or less value, which they said would serve him in place of a heart in the other world. They buried this earthen pot in a deep ditch, and fourscore days after, made oblations of bread and wine over it.

Such were the funeral rites of the common people; but at the death of kings, or lords, or persons of high rank, some peculiar forms were observed that are worthy to be mentioned. When the king fell sick, they put a mask on the idol of Huitzilopochtli, and also one on the idol of Tezcatlipoca, which they never took off until the king was either dead or recovered; but it is certain that the idol of Huitzilopochtli had always two masks, not one. As soon as a king of Mexico had expired, his death was published in great form, and all the lords who resided at court, and also those who were but a little distance from it, were informed of the event, in order that they might be present at the funeral. In the mean time they laid the corpse upon elaborately wrought mats, which was attended and watched by his domestics. Upon the fourth or fifth day after, when the lords had arrived, bringing with them rich dresses, beautiful feathers, and slaves to add to the pomp of the funeral, they clothed the corpse in fifteen or more very fine cotton garments of various colors, ornamented with gold, silver, and gems; they hung an emerald upon the under lip, which was to serve in place of a heart, covered the face with a mask, and over the panoply placed the ensigns of that god in whose temple or area the ashes were to be buried. They cut off some of the hair, which they preserved in a little box, together with some more which had been cut off in the infancy of the king, in order to perpetuate, as they said, the memory of the deceased. Upon the box they laid an image of the dead king, made of wood or of stone. Then they killed the slave who had been his chaplain, and had taken care of his oratory and all that belonged to the private worship of his gods, in order that he might serve him in the same office in the other world.

The funeral procession came next, attended by all the relatives of the deceased, the members of the nobility, and the wives of the late king, who testified their sorrow by tears and other demonstrations of grief. The nobles carried a great standard of paper, and the royal arms and ensigns. The priests continued singing,

but unaccompanied by any musical instrument. Upon their arrival at the lower area of the temple, the high priests, together with their servants, came out to meet the royal corpse, which, without delay, they placed upon the funeral pile of odoriferous resinous woods, together with a large quantity of copal and other aromatic substances. While the royal corpse and all its clothing, arms, and ensigns were burning, they sacrificed, at the bottom of the stairs of the temple, a great number of slaves who had belonged to the deceased and also those which had been presented by the lords. Along with the slaves they likewise sacrificed some of the deformed men, whom the king had collected in his palace for his entertainment, in order that they might give him the same pleasure in the other world; and for the same reason they used to sacrifice some of his wives. Acosta says (lib. v. cap. 8), that at the funeral of a lord, all the members of his family were sacrificed. But this is grossly false, and in itself incredible; for, had this been the case, the nobles of Mexico would soon have been exterminated. There is no record, in the History of Mexico, that, at the death of the king, any of his brothers were sacrificed, as this author would intimate. How is it possible that they could practise such cruelty, when the new king was usually elected from among the brothers of the deceased? The number of the victims was proportioned to the grandeur of the funeral, and amounted sometimes, as several historians have affirmed, to two hundred. Among the other sacrifices, the *techichi* was not omitted; they were firmly persuaded that, without such a guide, it would be impossible to get through some dangerous ways which led to the other world.

The day following, the ashes and the teeth which remained entire were gathered up; they sought for the emerald which had hung to the under lip until they found it; all were then put into the box with the hair, and deposited in the place destined for their sepulchre. During the four following days they made oblations of eatables over the place of burial; on the fifth they sacrificed several slaves, and also others on the twentieth, fortieth, sixtieth, and eightieth day after. From that time forward they sacrificed no more human victims; but, every year, they celebrated the day of the funeral with offerings of rabbits, butterflies, quails and other birds, and with oblations of bread, wine, copal, flowers, and certain little reeds filled with aromatic substances, which they called *acajetl.* This anniversary was held in the four succeeding years.

The bodies of the dead were usually burned. The bodies of those only who had been drowned, or had died of dropsy or some other chronic disease, were buried. But what was the reason of these exceptions, we know not.

There was no fixed place for burials. Many ordered their ashes to be buried near to some temple or altar, some in the fields, and others in those sacred places of the mountains where sacrifices used to be made. The ashes of the kings and lords were for the most part deposited in the towers of the temples, especially in those of the great temple. Solis, in his "History of the Conquest of Mexico," affirms that the ashes of the kings were deposited in Chapoltepec; but this is false, and contradicts the report of the conqueror Cortez whose panegyric he wrote, of Bernal Dias, and of other eye-witnesses to the contrary. Close to Teotihuacan, where there were many temples, there were also innumerable sepulchres. The tombs

of those whose bodies were buried entire, agreeably to the testimony of the Anonymous Conqueror who saw them, were deep ditches, walled with stone and mortar, within which they placed the bodies in a sitting posture upon *icpalli*, or low seats, together with the instruments of their art or profession. If it was the sepulchre of any military person, they laid a shield and sword by him; if of a woman, a spindle, a weaver's shuttle, and a *xicalli*, which was a vessel fashioned of a fruit similar to gourds, large and perfectly round. In the tombs of the rich they put gold and jewels, but all were provided with eatables for the long journey which they had to make. The Spanish conquerors, knowing of the gold which was buried with the Mexican lords, dug into several of their tombs and found considerable quantities of that precious metal. Cortes says, in his letters, that at one entry which he made into the capital, when it was besieged by his army, his soldiers found *fifteen hundred castillanos*, that is, two hundred and forty ounces of gold, in one sepulchre, which was in the tower of a temple. The Anonymous Conqueror says, also, that he was present at the opening of another sepulchre, from which they took about three thousand castillanos.

The caves of the mountains were the sepulchres of the ancient Chichimecs, who, as they grew more civilized, adopted, in this and other rites, the customs of the Acolhuan nation, which were nearly the same with those of the Mexicans.

The Miztecs retained in part the ancient usage of the Chichimecs, but in some things they were singular in their customs. When any of their lords fell sick, they offered prayers, vows, and sacrifices for the recovery of his health. If he was restored, they made great rejoicings. If he died, they continued to speak of him as if he was still alive, and conducted one of his slaves to the corpse, dressed him in the clothing of his master, put a mask upon his face, and for one whole day paid him all the honors which they had formerly rendered to the deceased. At midnight, four priests carried the corpse out and buried it in a wood, or in some cavern, particularly in that one where they believed the gate of paradise to be; on their return they sacrificed the slave, and laid him with all the ornaments of his transitory dignity in a ditch, but without covering him with earth. Every year they held a festival in honor of their last lord, on which they celebrated his birth, not his death, for of it they never spoke.

The Zapotecs, their neighbors, embalmed the body of the principal lord of their nation after death. Even from the time of the first Chichimecan kings, aromatic preparations were in use among those nations to preserve dead bodies from speedy corruption; but it is not known that these were very frequently used.[1]

It appears to be established by the researches of several antiquarians[2] that the small pyramids disposed in rows upon the parallels and meridians which bound the four faces of the two great pyramids of the sun and moon of Teotihuacan, Mexico, served as burying places for the chiefs of tribes.

Many years ago, in cutting a new road toward Puebla from Mexico, it became necessary to cross a portion of the base of the ancient Indian pyramid of Cholula.[3]

---

[1] History of Mexico, etc., vol. ii, pp. 103–110.

[2] Political Essays on the Kingdom of New Spain, etc., by Alexander von Humboldt, vol ii, p. 67

[3] Mexico as It was and as It is, by Brantz Mayer, p. 26.

The excavation laid bare a square chamber built of stone, the roof of which was sustained by cypress beams. In it were found idols of basalt, a number of painted vases, and the remains of two bodies. No care was taken of the relics by the discoverers, and they are lost forever.

Prescott, in his essay on the *Civilization of the Incas*, introductory to the "History of the Conquest of Peru," says that it was the belief in the resurrection of the body which led the Peruvians to preserve the body with so much solicitude, by a simple process, that, however, unlike the elaborate embalming of the Egyptians, consisted in exposing it to the action of the cold, exceedingly dry, and highly rarefied atmosphere of the mountains. Such, indeed, seems to be the opinion of Garcilasso, though some writers speak of resinous and other applications for embalming the body. The appearance of the royal mummies found at Cuzco, as reported both by Ondegardo and Garcilasso, makes it probable that no foreign substance was employed for their preservation. As the Peruvians believed that the occupations in the future world would have a great resemblance to those of the present, they buried with the deceased noble some of his apparel, his utensils, and frequently his treasures; and completed the gloomy ceremony by sacrificing his wives and favorite domestics to bear him company and do him service in the happy regions beyond the clouds. Vast mounds of an irregular, or, more frequently, oblong shape, penetrated by galleries running at right angles to each other, were raised over the dead, whose dried bodies or mummies have been found in considerable numbers, sometimes erect, but more frequently in the sitting posture common to the Indian tribes of both Continents. Treasures of great value have also been occasionally drawn from those monumental deposits, and have stimulated speculators to repeated excavations with the hope of similar good fortune. It was a lottery like that of searching after mines, but where the chances have proved against the adventurers. Yet these sepulchral mines have sometimes proved worth the digging. Sarmiento speaks of gold to the value of 100,000 *Castillanos*, as occasionally buried with the Indian lords[1] and Las Casas, not the best authority in numerical estimates, says that treasures worth more than half a million of ducats had been found within twenty years after the conquest in the tombs near Truxillo.[2] Humboldt visited the sepulchre of a Peruvian prince in the same quarter of this country whence a Spaniard, in 1576, drew forth a mass of gold worth a million of dollars![3]

Garcilasso has left on record the following description of the corpses of the Incas:—

"In the year 1560, in the house of the licentiate, Paul Ondegardo, I saw five bodies of the Incas, three men and two women. They had till now been concealed from the Spaniards. The first was that of the king Viracocha, who, by his snow-white hair, appeared to have been very aged. The next was his nephew, the great Tupac Yupanqui; and the third was Huayna Capac. The fourth was Mama Runtu, Queen of Viracocha; and the other was the body of Coya Mama Oello, mother of

---

[1] Relacions, M. S. cap. lvii.

[2] Œuvres, ed. par Llorente. Paris, 1822, tom. ii, p. 192.

[3] Vues des Cordillères, p. 29. (History of the Conquest of Peru, vol. i, pp. 54, 55.)

Huayna Capac. The corpses were so perfect that not a hair of the head or of an eyebrow was wanting. They were in such dresses as they wore when living, without any other mark of royalty than the Llautu on the head. They were seated after the manner of Indians, with the hands across the breast, and their eyes towards the earth. They were in such good preservation that they appeared almost as if alive; but the art by which they were embalmed is lost. I touched one of the fingers of Huayna Capac, and found it as hard as wood. I am of the opinion that the bodies had been dried by exposure to the air in the same manner as meat is prepared, and which, without any other process, has always been used for the provisioning of the troops, as it will keep good for any length of time. The bodies were so light that the smallest Indian could carry one on his shoulder or in his arms, when he was required to do so in order to satisfy the curiosity of a Spanish cavalier They covered them with a white cloth as they passed through the streets, where the people fell on their knees with tears in their eyes. Even the Spaniards took off their hats in consequence of their having borne the title of kings, which gave the Indians extreme delight."[1]

On the death of the Incas, and of other eminent persons, a great number of their attendants were put to death, and interred around their huaca, that they might appear in the next world with their former dignity, and be served with the same respect. On the death of Huayna Capac, the most powerful of their monarchs, above a thousand victims were doomed to accompany him to the tomb.[2]

The Peruvians, according to Garcilasso, buried with the deceased Inca all his vessels of gold and silver, even those for the use of the kitchen; also his clothes and valuable jewels, with some furniture. The domestics, and women to whom he had been most attached, were buried with him alive by their own desire, and it frequently occurred that so many offered themselves to accompany their deceased masters that their superiors were obliged to limit the number. The first month was devoted to tears; and the banners, arms, clothes, and all the things that were to be buried, were exhibited in the different quarters of Cuzco. The lamentations were renewed twice each month, at the full and the change of the moon. Men and women, called *weepers*, were appointed to chant, in mournful strains, the virtues and heroic acts of the deceased. The mourning was observed throughout the empire.[3]

The Peruvian tombs, according to Ulloa, were constituted in the following manner: The Indians having laid the body of the dead upon the ground, erected over it a rude arch of stones or bricks, and covered it with a tumulus of earth, which they called *huaca*. In general they are eight or ten toirsies high, and about twenty long, and the breadth is rather less; but some are larger. They are in shape not precisely pyramidal, but more like hillocks. The plains near Cayambe are covered with them; one of their principal temples having been there where the kings and Caciques of Quito were buried.

The tombs accorded in size with the rank of the deceased; with them were buried their furniture and instruments of gold, copper, stone, and clay. Out of one huaca, in the presence of Ulloa, was taken a considerable quantity of gold utensils. In another, in the jurisdiction of Pastos, great riches were found; some copper axes, small looking-glasses of the Inca-stone, and of Galinazo or black-

---

[1] Book V, Chap. XXIX, Book III, Chap. XX.
[2] Robertson, vol. ii, p. 325.
[3] Book VI, Ch. IV and V.

stone. The form of these is circular, and one of the surfaces flat and as smooth as a crystal mirror; the other oval and less polished. I saw one a foot and a half in diameter; its principal surface was concave and greatly magnified objects, and the polish of which could not now be exceeded by our best workmen. A hole is drilled to hang them by. They found, also, guaqueros for drinking chica; some of which are made of fine black clay, and others of red clay. They are round, with the handle in the middle, the mouth on one side, and the head of an Indian excellently expressed on the other. Among the gold pieces are found nose jewels, which, in form, resemble the foot of a chalice, but are a little smaller; collars, bracelets, and ear-pendants like the nose jewels, and all of them not thicker than paper. The idols which are full length are hollow, of one piece, and show no mark of soldering. Emeralds are found in the tombs, spherical, cylindrical, and conical, and pierced with the greatest delicacy; this is very remarkable, as steel and iron were unknown.[1]

Humboldt states that during his travels in Peru, in visiting the ruins of the City of Chimu, near Mansiche, he went into the interior of the famous Guaca de Toledo, the tomb of a Peruvian prince, in which Garci Gutierez de Toledo discovered, in digging a gallery in 1576, masses of gold amounting to five millions of francs, as is proved by the accounts in the mayor's office at Truxillo.[2]

The burial customs of the ancient Mexicans and Peruvians appear to have been similar to those of the Mongol Tartars.

Humboldt has given, in his *Personal Narrative of Travels to the Equinoctial Regions of America*, the following interesting description of the cavern and mummies of Ataruipe:—

"In this shady and solitary spot, on the declivity of a steep mountain, the cavern of Ataruipe opens to the view. It is less a cavern than a jutting rock, in which the waters have scooped a vast hollow, when, in the ancient revolutions of our planet, they attained that height. In this tomb of a whole extinct tribe, we soon counted nearly six hundred skeletons well preserved, and regularly placed. Every skeleton reposed in a sort of basket made of the petioles of the palm tree. These baskets, which the natives call *mapires*, have the form of a square bag. Their size is proportioned to the age of the dead; there are some for infants cut off at the moment of birth. We saw them from ten inches to three feet four inches long, the skeletons in them being bent together. They are all ranged near each other, and are so entire that not a rib or a phalanx is wanting. The bones have been prepared in three different methods, either whitened in the air and the sun, dyed red with annotto, or, like mummies, varnished with odoriferous resins and enveloped in leaves of the heliconia or of the plantain tree. The Indians informed us that the corpse is placed in damp ground, that the flesh may be consumed by degrees; some months afterwards it is taken out and the flesh remaining on the bones is scraped off with sharp stones. Several hordes in Guiana still observe this custom. Earthen vases half baked are found near the *mapires* or baskets. They appear to contain the bones of the same family. The largest of these vases or funeral urns are five feet high and three feet three inches long. Their color is greenish-gray, and their oval form is pleasing to the eye. The handles are made in the shape of crocodiles or serpents; the edges are bordered with painted manders, labyrinths, and grecques, in rows variously combined.

"It appears that to the north of the cataracts, in the straits of Baraguan, there are caverns filled with bones similar to those I have just described." * * *

---

[1] Ulloa, vol. i, pp. 366–369.

[2] Vol. i, p. 92.

"No traces of the precious metals have been found in the caverns which have served the natives of Guiana for ages as sepulchres. This circumstance proves that even at this period, when the Caribs and other travelling nations made incursions to the southwest, gold had flowed in very small quantities from the mountains of Peru towards the eastern plains.

"Wherever the granitic rocks do not present any of these large cavities caused by their decomposition, or by an accumulation of their blocks, the Indians deposit their dead in the earth. The hammock (chincoro), a kind of net in which the deceased had reposed during his life, serves for a coffin. This net is fastened tightly around the body, a hole is dug in the hut, and there the body is laid. This is the most usual method according to the account of the Missionary Gili, and it accords with what I myself learned from Father Zea. I do not believe that there exists one tumulus in Guiana, not even in the plains of the Casiquiare and the Essequibo. Some, however, are to be met with in the Savannahs of Varinas, as in Canada, to the west of the Alleghanies. (Mummies and skeletons contained in baskets were recently discovered in a cavern in the United States. It is believed they belonged to a race of men analogous to that of the Sandwich Islands. The description of these tombs has some similitude with that of the tomb of Ataruipe.) It seems remarkable enough that, notwithstanding the extreme abundance of wood in these countries, the natives of Oronoco were as little accustomed as the ancient Scythians to burn the dead. Sometimes they formed funeral piles for that purpose; but only after a battle, when the number of the dead was considerable. In 1748, the Parecas burned not only the bodies of their enemies, the Tamanacas, but also those of their own people who fell on the field of battle. The Indians of South America, like all nations in a state of nature, are strongly attached to the spot where the bones of their fathers repose. This feeling, which a great writer has beautifully painted in the episode of Atala, is cherished in all its primitive ardor by the Chinese. This people, amongst whom everything is the produce of art, or rather of the most ancient civilization, do not change their dwelling without carrying along with them the bones of their ancestors. Coffins are seen deposited on the banks of great rivers to be transported, with the furniture of the family, to a remote province. These removals of bones, heretofore more common among the savages of North America, are not practised among the tribes of Guiana; but these are not nomad like nations who live exclusively by hunting."[1]

Dr. Morton, in his "Crania Americana," gives, as an additional evidence of the unity of race and species in the American savage nations, the singular fact that, from Patagonia to Canada, and from ocean to ocean, and equally in the civilized and uncivilized tribes, a peculiar mode of placing the body in sepulture has been practised from time immemorial. This peculiarity consists in the *sitting posture.*

Dr. Morton illustrates this characteristic by a plate and drawing of the mummy of a Muysca Indian of New Grenada. In this instance the body is in a sitting posture, the legs being flexed against the abdomen, and the feet turned inwards. The arms are also bent so as to touch the chest, the chin being supported in the palms of the hands, and the fingers received into the hollow beneath the cheek bones. This interesting relic was brought from New Grenada, in South America, by the late Charles Biddle, Esq., who presented it to the Academy of Natural Sciences, of Philadelphia, where it is now preserved. The body is not embalmed, but only desiccated; yet the muscles are so well preserved as to render it probable that some antiseptic fluid may have been applied to them.

Dr. Morton traces this singular custom from south to north, and we give his observations in full, as they possess great interest to the present inquiry, premising that a large number of the examples to which he refers have already been referred to.

---

[1] Personal Narrative, Trans., vol. ii, pp. 482–489.

"The Moluches and Pampas of Patagonia bury their dead in large square pits. The bodies are placed in a row, *sitting*, with all the weapons and other property which had belonged to the dead.[1] Dobrizhoffer also observes that the equestrian tribes of that country 'prepare the corpse in such manner that the knees touch the face.'[2]

"The Indians of Chili had the same customs, but they exposed their dead on a stage above ground.[3]

"The Coroados of Brazil place the body in a sitting posture in a large pot, which is buried in the ground amidst cries and lamentations.[4]

"The Paraguas of Paraguay place the dead in a similar attitude[5] This custom as practised among the Atures, in the Valley of the Orinoco, has already been stated

"Garcilasso de la Vega states that in the year 1560, he saw five embalmed bodies of Peruvian Incas, three men and two women. 'They were seated in the manner of INDIANS, with the hands across upon the breast, and their eyes toward the earth.'[6] 'The mountain Indians,' says Herrera, 'commonly build their tombs high, like towers, and hollow; and they buried their dead bowing the body, their thighs bound and in the sitting attitude'[7] Dr. Ruschenberger, who personally exhumed several mummies near Arica, states that 'the body was placed in a squatting posture, with the knees drawn up and the hands applied to the side of the head.'"[8] Dr. Morton himself examined the desiccated bodies of six Peruvians, all of which were in the same position.

"The Indians of New Grenada followed the same custom, as is proved by the annexed illustration. The Spanish residents of that republic have a tradition that the natives, flying from the violence of their conquerors, died in caves and other obscure places, in an attitude which truly seems indicative of despair. Some very ancient monuments are said by Herrera to have been discovered by the early Spaniards near Zenu, in Venezuela: 'These graves or tombs were magnificent, adorned with broad stones, into which the bodies were placed in a sitting posture.'[9]

"The Mexicans sometimes burned and sometimes buried their dead; when they buried them it was 'in deep ditches formed of stone and lime, within which they placed the bodies in a sitting posture, on low seats, or *icpalli*.'[10] The same author adds, that Quinetzin, one of the early Chichimecan kings of Mexico, was embalmed 'and afterwards placed in a great chair, clothed in royal habits.'[11]

"When a Carib died, his body was placed in the grave in an attitude 'resembling that in which they crouched round the fire or the table when alive, with the elbows on the knees, and the palms of the hands against the cheeks.'[12]

"The Muskogees or Creeks had a similar usage.[13] The latter author adds that the Arkansas had the same practice, 'with the addition of tying the head down to the knees.'[14]

"The Alibamons bury their dead in a sitting posture; in order to justify this custom they say that man is upright, and has his face turned towards heaven, which is to be his habitation.[15]

"On the discovery of the Mammoth cave in Kentucky, a woman was found in a state of complete desiccation. 'She was buried in a squatting form, with the knees drawn up close to the breast, the arms bent, with the hands raised, and crossing each other about the chin.'[16]

"Dr. Morton was informed by Mr. Nuttall, that such was the custom of the Osages of Missouri;

---

[1] Falkner's Patagonia, quoted in Appendix to Molina.
[2] Hist. Abipones, i, p. 132.
[3] Forster, Obs. during a Voyage Round the World, p. 564.
[4] Spix and Martius, Trav. in Brazil, ii, p. 250.
[5] De Azara, Voy. dans l'Amérique, ii, p. 143.
[6] Comment., Book V, Chap. 29.
[7] Hist., Dec. III, Lib. 9, Cap. 3.
[8] Crania Am., p. 109.
[9] Hist. Amer., iv, p. 221.
[10] Clavigero, Hist. of Mexico, B. VI.
[11] Idem, B. II.
[12] Sheldon, in Archæolog. Amer., i, p. 378; Sir W. Young, Account of the Caribs, p. 8.
[13] Bartram, Travels, p. 515; Romans, History of Florida, i, p. 98.
[14] Idem, p. 101.
[15] Le Bossu, Trav. in Louisiana, i, p. 157.
[16] Archæolog. Amer., i, p. 359.

of the Omahaws;[1] of the Mandans;[2] of the Potowatomies;[3] of the Chippeways;[4] of the Delawares;[5] of the Nahants and other tribes of Lenape in New England.[6] The present town of Salem, in Massachusetts, is the site of the old village of the Naumkeags; on making an excavation a few years since, many skeletons were found, 'placed very near each other, with the knees drawn up to the breast, and the hands laid near the face, which was directed to the east."[7] Dr. Pearson had a drawing of the skeletons made *in situ.*

"In respect to the Canadian Indians, Charlevoix observes: 'The dead man is painted, enveloped in his best robe, and, with his weapons beside him, is exposed at the door of his cabin in the posture which he is to preserve in the grave; and this posture is that which a child has in the bosom of its mother.'[8]

"Some excavations at Goat Island, at the Falls of Niagara, have revealed the same fact."[9]

Dr. Morton was assured by Dr. Troost that the mounds he opened in Tennessee contained skeletons in the same attitude; and Lieutenant Mather made a similar communication to Dr. Morton in reference to a mound examined by him in Wisconsin.

From these examples Dr. Morton concludes that, notwithstanding the diversity of language, customs, and intellectual character, this usage may be traced throughout both Americas, and affords collateral evidence of the affiliation of all the American Nations.[10]—*Crania Amer.*, pp. 244–246.

We have now carefully examined the modes of burial practised by the American aborigines in extenso, and it is evident that the ancient race of Tennessee is distinguished from all others by their peculiar method of interment in rude stone coffins.

Whilst the custom of burying the dead in the sitting posture was almost universal with the various tribes and nations of North and South America, the ancient inhabitants of Tennessee and Kentucky buried most commonly in long stone graves, with the body resting at length, as amongst civilized nations of the present day in Europe and America. The method of inclosing the body in a box or sarcophagus of wood or stone appears to have originated with the Egyptians, and was employed both by the Greeks and Romans, and it is from these nations most probably that the custom extended, or rather was transmitted to the modern civilized nations.

During a recent visit to Scotland, England, Wales, and France, I examined with care the various museums with especial reference to the mode of burial practised

---

[1] James, Exped., i, p. 224.
[2] Lewis and Clarke, Exped., i, p. 163.
[3] Keating, Exped., i, p. 115.
[4] Bartram, Trav., ii, p. 266.
[5] Smith, Hist. of New Jersey, p. 137.
[6] Warren, Compar. View, etc., p. 134.
[7] Dr. Pearson's Letter to Dr. Morton.
[8] Journal d'un Voyage, etc., vi, p. 107.
[9] Ingram's Manual, etc., p. 63.
[10] This practice is not exclusively American. Mr. Edwards (*Hist. of the West Indies*, Book I, Appendix) cites Herodotus for its prevalence among the Nassamones, a people who inhabited Northern Africa between Egypt and Carthage; and Cicero records it as a usage of the ancient Persians. The modern Circassians, on the death of a nobleman, "set up a high wooden bed in the open air, upon which they place the body of the deceased in a sitting attitude after the bowels have been taken out;" but the interment, which is eight days later, is in the recumbent posture. (Klaproth, *Caucasian Nations*, p. 337.) The New Hollanders sometimes bury their dead in this attitude. (Breton, *N. South Wales*, p. 203.) The Hottentots, says Kolbein, double up the corpse "neck and heels, much in the manner of a human fœtus." (*Present State of Cape of Good Hope*, p. 315.) The people of the Tonga Islands, Pacific Ocean, inter their dead in this position (Marriner, *Tonga Islands*, p. 211); and Kotzebue has also observed it at the islands of Radack and Ulea. (*Voyage of Discovery*, iii, pp. 173, 211)—*Crania Americana*, p. 246.

by the ancient inhabitants of these countries, and in the Antiquarian Museum of Edinburgh I saw relics which had been taken from an ancient burial ground near the city, in which the dead were inclosed in rude stone coffins similar to those of the ancient race of Tennessee and Kentucky. I was informed that history threw no light upon the time when the bodies were deposited in the rude stone coffins, and they were referred to an era, at least as old as the Roman Conquest of Britain.

In looking at the rude stone coffins of Tennessee I have again and again been impressed with the idea, that in some former age this ancient race must have come in contact with Europeans, and derived this mode of burial from them.

This view is sustained, not only by the presence of copper crosses, and of vases with crosses and scalloped circles painted around them, and of bones evidently diseased by *syphilis*, in the stone graves, but also by certain traditions formerly preserved by the surrounding Indian tribes.[1]

It will be seen from the subsequent investigations into the contents of the stone graves and mounds of the aborigines of Tennessee and Kentucky, that, if they were brought in contact with the whites, an amalgamation was formed, that the Indian element preponderated, and that the mixed race retained chiefly its ancient customs and religion

---

[1] See Haywood, pp. 217–219.

CHAPTER III.

MOUNDS, FORTIFICATIONS, AND EARTHWORKS.

NUMEROUS mounds of various dimensions are found on the banks of the Cumberland, Big Tennessee, Little Tennessee, French Broad, Hiawassee, Elk, Harpeth, Duck, and Stone Rivers, and on the streams which empty into the Mississippi, running from the dividing ridge between that river and the Tennessee.

As a general rule, these mounds have been erected upon rich alluvial bottoms, and are either surrounded by extensive earthworks or are located in the neighborhood of the fortifications which mark the sites of ancient towns.

The mounds vary in number and dimensions with the extent and richness of the valleys and the size of the earthworks. The smallest are not more than a few feet in height, and about thirty feet in diameter; whilst the largest attain a height of seventy feet, and cover from one to two acres of ground.

Many of the smaller mounds were used for the burial of the dead, others for purposes of religious sacrifice and for the burning of the dead, whilst the largest pyramidal mounds were most probably the sites of the temples and council-houses of the aborigines.

Extensive fortifications several miles in extent, inclosing two systems of mounds, and numerous stone graves, lie along the Big Harpeth River about sixteen miles below Old Town, at Mound Bottom, and on Osborn's Place. Within these extraordinary aboriginal works, which inclose the sites of two ancient cities, are found three pyramidal mounds about fifty feet in elevation, and each one exposing about one acre on its summit; and, besides these, are numerous lesser mounds.

Such structures must have required the labor of a considerable population for a series of years; and the erection of these earth pyramids must have been slow and tedious, as the aborigines were without beasts of burden, and the immense masses of earth must have been carried by hand in baskets and skins.

The old road or trail which connected these ancient aboriginal towns can still be recognized in the forest, the well-worn and compact path being in some places a foot or more lower than the general surface of the surrounding soil.

Similar fortifications and mounds are found higher up on the same river, at Old Town, near Franklin; and it is evident, from these facts, that a chain of fortified towns extended in former times all along the Valley of the Big Harpeth. From careful excavations, examinations, and measurements, together with comparison of the crania, I am convinced that the mounds and fortifications of the Big Harpeth, Cumberland, and other rivers of Tennessee, were erected by the same extinct aboriginal race.

I have examined similar works of an extensive character on the Mississippi in the vicinity of the present town of Hickman, Tennessee.

One of the most remarkable aboriginal remains in Tennessee was found in the fork of Duck River, near Manchester, and is known as the *Stone Fort.* The walls of the structure were formed of loose stones gathered from the bed of the river. The gateway, which opens towards the neck of land lying between the branches of the river, is carefully protected by an inner line of works so constructed that the enemy entering the area would be received into a cul-de-sac. Directly in front of this gateway, and about half a mile distant, stands a remarkable mound, the structure of which is similar to that of the walls of the *Fort*, being composed of stones, the largest of which do not exceed a foot and a half in diameter. This oblong mound is 600 feet in circumference, and 40 feet in height, and the labor of collecting and depositing the loose stones by hand must have been considerable.

With these preliminary remarks I proceed to give a detailed account of the results of my explorations. It has been deemed best not only to record the general results of the explorations of the mounds, fortifications, and graves, but also to give, at the same time, descriptions of the various relics.

Stone Grave Burial Mounds.

In a small mound, about forty-five feet in diameter, and about twelve feet in height, which I explored, about ten miles from Nashville, near Brentwood, on the banks of a small rivulet issuing from a cool never-failing spring of water, and which contained, perhaps, one hundred skeletons, the stone graves, especially toward the centre of the mound, were placed one upon the other, forming in the highest part of the mound three or four ranges. The oldest and lowest graves were of the small square variety, whilst those near or on the summit, were of the natural length and width of the inclosed skeletons. In this mound, as in other burial places, the bones in the small square stone graves were frequently found broken; and whilst some graves of this description contained only a portion of an entire skeleton, others contained fragments of two or more skeletons mingled together. These square graves were not of sufficient depth to receive the body in a sitting posture, and appeared to have been the receptacles of the bones after the flesh had been removed. The small mound now under consideration was one of the most perfect in its construction, the lids of the upper stone cists being so arranged as to present a uniformly rounded, sloping rock surface. This mound was situated on the western slope of a beautiful hill, covered with the magnificent growth of the native forest. The remains of an aboriginal earthwork were still visible surrounding the site of an extensive encampment and several mounds. In a large and carefully constructed stone tomb, the lid of which was formed of a flat rock over seven feet in length and three in width, I found the bones of an aged individual. The skeleton was about seven feet in length, and the huge jaws had lost every vestige of teeth, the alveolar processes being entirely absorbed. In a grave occupied by what appeared to be a female skeleton, there was near the head a small compartment or stone box, separated from the main coffin by stone

slabs, within which were discovered the bones of an infant. Pieces of pottery were found with the bones in the stone coffins, but no entire vase or vessel, or stone implement, or idol, was discovered in this mound. Although great care was exercised, it was found to be impossible to extract the crania entire, owing to the soft, decayed state of the bone. An examination of the crania *in situ*, after the removal of the surrounding soil, showed that they were all more or less compressed in the occipital region into a pyramidal form, having a long transverse or parietal diameter. The jaw bones were massive, with widely diverging rami, and the nasal bones were large and prominent.

The aborigines of Tennessee scooped out the floor of the tent or wigwam, so as to leave a circular depression with elevated borders. Within the line of the earthworks the circular depressions of the ancient habitations or wigwams were very distinct and easily recognized. Certain low mounds, not more than from two to four feet in height, with depressions in the upper surface, as in the case of the extensive remains on the Big Harpeth, at Osborn's and Mound Bottom, appear to have once formed the floors of large circular wigwams. These hollowed sites are found most generally in regular rows within the line of fortification; I have, however, in some localities, seen them in great numbers on the banks of the water-courses at considerable distances from the main works, and, in such cases, they occupied favorable positions for a fair and extended prospect or out-look of the lowlands up and down the stream. In many localities the sites of these ancient towns have been cultivated for a number of years, and the marks of the habitations have been, to a great extent, obliterated by the plow-share.

The Mandans appear to have formed their wigwams in a similar manner, and to have left traces of their encampments. Catlin, who descended the Missouri River from the Mandan Village to St. Louis, a distance of 1800 miles, from the reputed remains of the ancient localities of this tribe, was fully convinced that he had traced them down nearly to the mouth of the Ohio River. From similar appearances, which this author observed in the interior of Ohio, he conceived that this tribe had formerly occupied that part of the country, and from some cause or other were put in motion, and continued to make repeated moves until they arrived at the place of their residence at the time of their extinction on the Upper Missouri. Catlin gives a chart of the positions of these ancient towns, and also of the numerous fortifications which are now remaining on the Ohio and Muskingum Rivers, in the vicinity of which he believed the Mandans once lived, and refers these works to this tribe of Indians. He expresses his belief that they derived their knowledge of the art of fortification from the Welsh under Prince Madoc or Madawc, who sailed with a colony from North Wales in the early part of the fourteenth century, and is supposed to have settled and mingled with the aborigines somewhere in the Mississippi Valley. According to this original observer of the Indian tribes of North America, the existence of the Mandan villages is known by the excavations of two feet or more in depth, thirty or forty feet in diameter, and of a circular form, made in the ground for the foundations of their wigwams, which leave decided remains for centuries.

The Mandans always fortified their towns by a strong picket or stockade, and

thus successfully withstood the assaults of their enemies. The Riccarees and Minetarees build and fortify their wigwams in the same way, but Catlin supposes that they derived the knowledge from the Mandans. He finds a further confirmation of his views in the fact that the pottery manufactured by the Mandans was equal in beauty and excellence to that exhumed from the ancient graves and tumuli of the Mississippi Valley. It is evident, therefore, that the art of fortification, as well as the mode of constructing wigwams, and the art of fashioning well-formed and ornamented pottery practised by the mound builders and stone-grave race of Tennessee, were preserved by the Mandans up to the time of their supposed extinction by the smallpox; and it is well known that, at the time of the discovery of the American continent, various Indian nations and tribes fortified their towns by earthworks and stockades, erected burial, sacrificial, and ornamental mounds and earth pyramids, and possessed the art of manufacturing well-formed vessels. The fact that the Mandans erected earthworks, constructed their wigwams in a certain manner, and practised certain arts, by no means justifies the conclusion of Catlin, that these Indians were the exclusive authors of the extensive works found in Ohio, Kentucky, and Tennessee. Authentic historical records exist to show that the monumental remains found in the Mississippi Valley, and along the tributaries of this great river, must be referred to various aboriginal nations.

The hill on which the residence of Colonel Overton stands, about nine miles from Nashville, was in former times occupied by an aboriginal settlement. The circular depressions of the wigwams are still visible in this locality. The aborigines appeared to have been attracted to this place by the noble spring which bursts out at the foot of the hill. "Thousands of bones" were said to have been exhumed in excavating the basement and cellar of the family mansion, and the summit of the hill appeared to have been crowned by a burial mound which has been almost entirely destroyed. The crest and southeastern slope of the hill are covered with stone graves, many of which have been opened. A large number are concealed by the rank growth of weeds and grass. Those which I examined at this locality were all constructed on the same plan. Here, as elsewhere, the graves were of various sizes, from that just sufficient to inclose the remains of a little child up to the long stone coffin of eight feet. Upon careful examination of the smallest graves, I found, that, so far from inclosing a race of *pigmies*, they contained remains of children and infants. I found the teeth in all stages of development, through the period of dentition up to the appearance of the *wisdom teeth*.

The graves which I examined at this locality were all formed on the same plan; the earth having been excavated to the depth of about eighteen inches, and the dimensions of the excavation corresponding to the size of the skeleton. The sides of each were lined with carefully selected flat stones, forming a perfect parallelogram, with a single stone for the head and foot. The skeleton or body of the dead person was then deposited at full length. In the square short grave the skull was placed in the centre and surrounded by the long bones. After great labor I exhumed an entire skull from one of these square, short graves. The long bones were arranged

in the manner indicated, and several parts of the skeleton were wanting, thus showing that the skeleton, or rather its component parts, had been deposited in this grave after the flesh had been separated from the bones.

The occipito-frontal arch of this cranium is quite perfect, but its general outline, when viewed from the base or the vertex, is irregular. The occiput is but slightly flattened, and is divided into two distinct portions by a well-marked suture running directly across from the inferior angles of the parietal bones. Below this suture the occiput presents a well-marked protuberance, which is, as far as my observation extends, uniformly absent from the crania of the stone graves. In addition to the division of the occiput into two distinct portions, we observe five other intercalated bones; three upon the left border, and two upon the right border of the occipital bone. This skull had evidently been subjected to little or no compression during its early growth in infancy and childhood, and pressure was evidently not the cause of these divisions of the occiput. Both the facial angle and the internal capacity are below the maximum of the crania of the stone grave race of Tennessee; the frontal and parietal diameters are less, and the occipito-frontal arch is greater than the average measurements. Thus: facial angle, 78°; internal capacity, 79 cubic inches; longitudinal diameter, 7 inches; parietal diameter, 5.2 inches; frontal diameter, 3.9 inches; vertical diameter, 5.8 inches; intermastoid arch, 14.7 inches; intermastoid line, 4.6 inches; occipito-frontal arch, 15.2 inches; horizontal periphery, 19.5 inches; diameter of face and head, 7.4 inches; zygomatic diameter, 5 inches.

Frequently an earthen vessel, composed of a mixture of shells and clay, was laid under or by the side of the head, or about the middle of the stone cist opposite the pelvic bones. In a large long grave of a young man, whose jaw-bones contained the wisdom teeth still encased, a small dark vase with two small holes in the rim, and with two animals resembling a beaver and a fish raised on the side, was exhumed. This small vase or cup was probably worn suspended from the neck, and had been apparently placed in the hand of the skeleton, the crumbling bones of the fingers surrounding it. The measurements are: 4 inches in the long diameter, and 3.2 inches in the short diameter. Figs. 1 and 2 present a general outline of the top and side of this specimen.

Fig. 1.

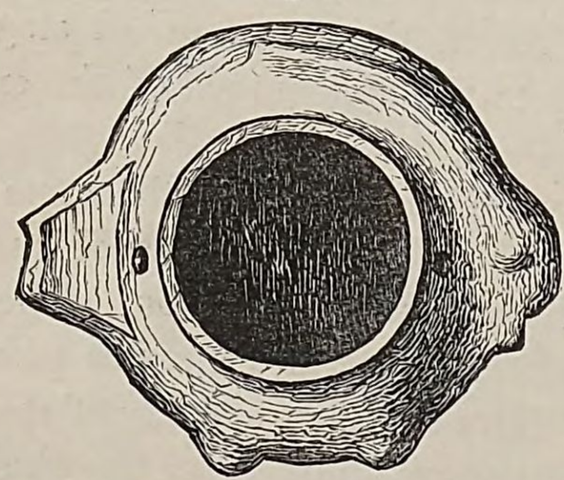


Fig. 2.

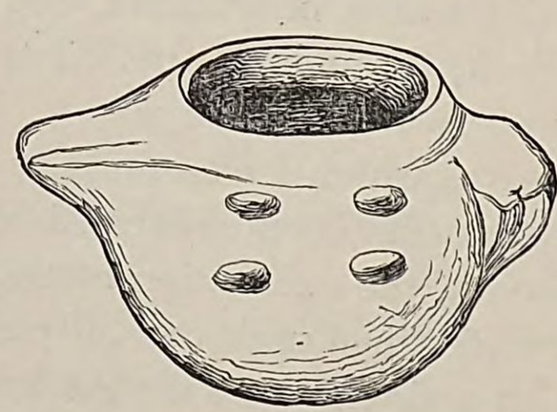


Fig. 1, front view: Fig. 2, side view, of a small vase composed of clay and crushed shells, from a stone coffin at Colonel Overton's, near Nashville, Tennessee. About one-fourth the natural size.

Graves and burial mounds are also found at and near Brentwood; and from one of the stone graves of this locality I obtained the small vase or drinking cup, fashioned like a river shell, represented in outline in Fig. 3.

This specimen is $5\frac{1}{2}$ inches in the longest diameter.

Fig. 3.

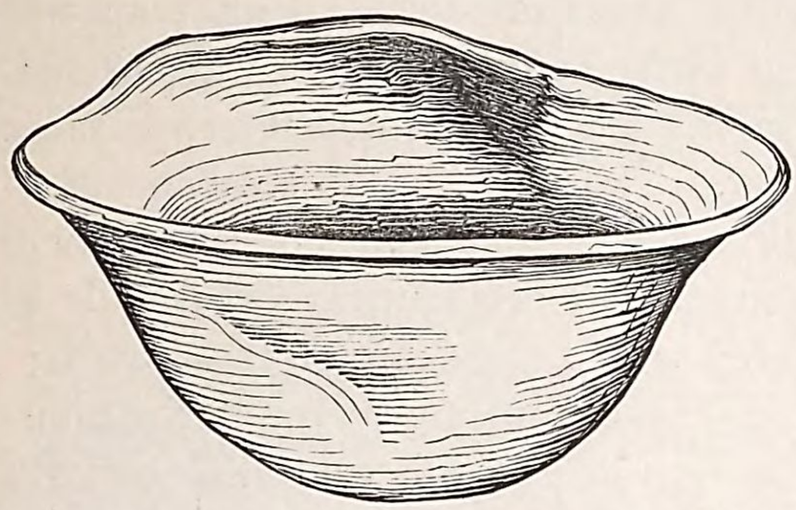


Fig. 4.

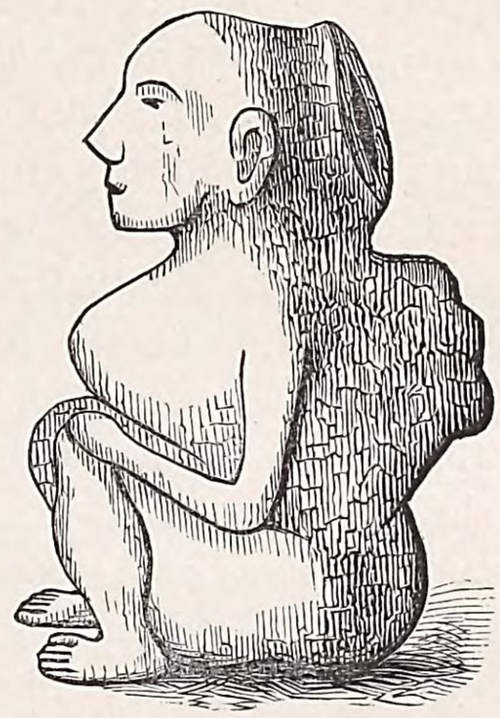


Fig. 3. Drinking cup, composed of dark clay and crushed shells, from a stone grave near Brentwood, Tennessee. About one-half the natural size.

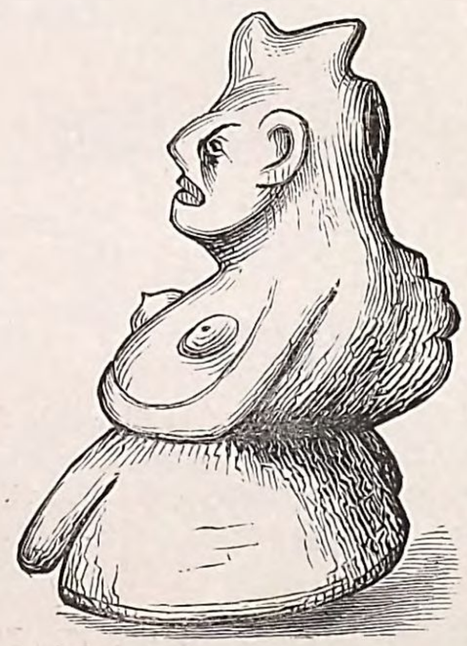
Fig. 4. Hollow image composed of clay and crushed shells, from a stone grave in a burial mound, near Brentwood, Tennessee. One-half the natural size.

The small image represented in Fig. 4 was, in like manner, exhumed from a stone grave at Brentwood.

This object is $4\frac{1}{2}$ inches in height, and represents a human figure in a sitting posture, with the hands on the knees. The breast and back of the figure resemble those of human beings in whom the spine has been diseased and curved.

From a stone grave situated upon the slope of the hill on which stands the residence of Colonel W. D Gale, near Nashville, I exhumed a small image representing a short deformed female in a kneeling posture. It will be seen from the outline figure of this image, Fig. 5, that the nose is prominent, the forehead retreating, and that the head is ornamented with a crown. This image is composed of clay and crushed shells, is hollow within, and 4.3 inches in height.

Fig. 5.



Small image, representing a short deformed female in a kneeling posture, composed of crushed shells and dark clay, from a stone grave situated on the slope of the hill, above the spring, near the residence of Colonel W. D. Gale, a short distance from Nashville, Tennessee.

Sacrificial and Burial Mounds.

Some of the burial mounds were evidently used also for religious purposes. Thus in a small mound, about one hundred feet in diameter, and about ten feet high, which I explored on the eastern bank of the Cumberland River, opposite the city of Nashville, across from the mouth of Lick branch, at the foot of a large mound,

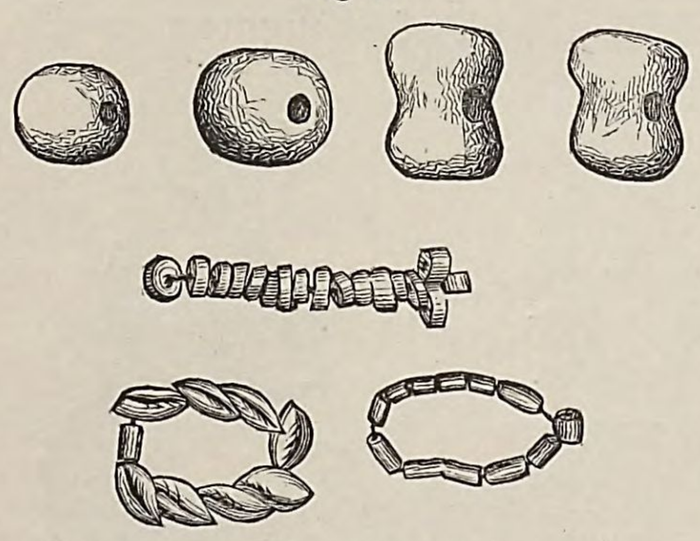
which had been apparently used as a residence or site of a temple, I discovered the following remains.

In the centre of the mound, about three feet from its surface, I uncovered a large sacrificial vase or altar, forty-three inches in diameter, composed of a mixture of clay and river shells. The rim of this flat earthen vessel was three inches in height. It appeared to have been moulded in a large wicker basket, formed of split canes and the leaves of the cane, the impressions of which were plainly visible on the outer surface. The rim of this earthen vessel or sacrificial altar appeared to be almost mathematically circular. The surface of the "altar" was covered with a layer of ashes, about one inch in thickness. These presented the appearance and composition of incinerated animal matter. The antlers and jaw-bone of a deer were found resting on the surface of this object. The edges of the *altar* or fire vessel, which had been broken off apparently by accident, were carefully placed over the layer of ashes, and then covered with nearly three feet of earth; thus the ashes were preserved to a remarkable degree from the action of the rains.

Stone coffins or rude sarcophagi were ranged around this central object, with the heads of the dead toward the centre and the feet toward the circumference of the mound, resembling the radii of a circle.

The inner circle of graves was constructed with great care, and all the bodies buried around the altar were ornamented with beads of various kinds; some of which had been cut out of large sea-shells, others out of bone, and others again were composed of entire sea-shells of small size, and punctured so as to admit of the passage of the thread upon which they were strung. The large shell beads were found most generally by the side of the crania, and upon the breast, as if they had constituted ear-rings and necklaces; the smaller beads were found most generally surrounding the waist, and the arm and leg bones.

Fig. 6.



Various forms of shell beads from the stone coffins in the mounds on the banks of the Cumberland River, opposite Nashville, Tennessee. One-fourth the natural size.

The various forms of beads from this mound are represented in Fig. 6.

In a carefully constructed stone sarcophagus, in which the face of the skeleton was looking towards the setting sun, a beautiful shell ornament was found resting upon the breast bone of the skeleton. This shell ornament is 4.4 inches in diameter, and it is ornamented on its concave surface with a small circle in the centre, and four concentric bands differently figured in relief. The first band is filled by a triple volute; the second is plain; the third is dotted, and has nine small round bosses carved at unequal distances upon it. The outer band is made up of 14 small elliptical bosses, the outer edges of which give to the object a scalloped rim. This ornament on its concave figured surface had been covered with red paint, much of which was still visible; the convex smooth surface is highly polished, and plain with the exception of three concentric marks. The material out of which it is

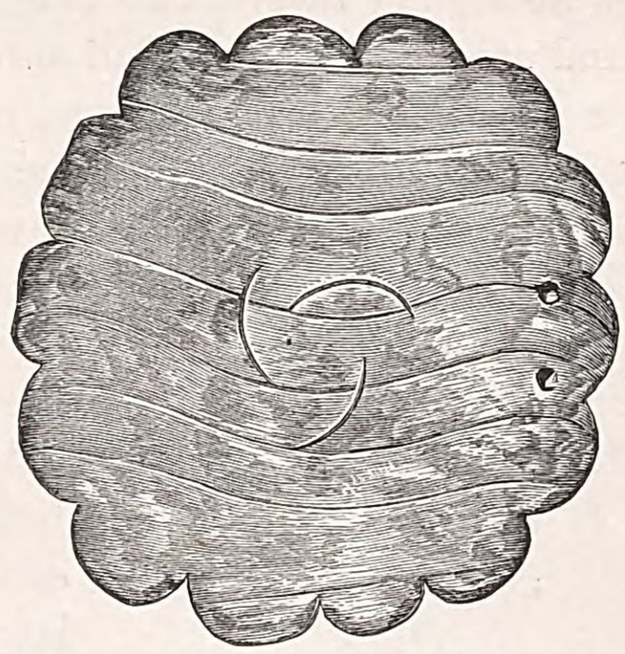
formed was evidently derived from a large flat sea-shell; no fresh-water mussel in any part of the waters of Tennessee and of the surrounding States could furnish a uniform thickness of flat shell equal to this; and the regularity of its convex and concave surfaces, as well as the perfection of all its parts, and the uniformity of its thickness (about $\frac{3}{10}$ of an inch) are proofs that it must have been derived from a large shell from the sea-coast.

The form of the circles or "*suns*," carved upon the concave surface, is similar to that of the paintings on the high rocky cliffs on the banks of the Cumberland and Harpeth.

Figs. 7 and 8 represent the carvings on this shell ornament.

Fig. 7.

Fig. 8.



Figs. 7 and 8. Shell ornament from the breast of a skeleton, lying in a carefully constructed stone coffin, in the summit of a mound on the banks of the Cumberland River, opposite Nashville, Tennessee. Figure 7 represents the concave, carved, and painted surface, and figure 8, the convex surface.

This ornament, when found, lay upon the breast bone, with the concave surface uppermost, as if it had been worn in this position, suspended around the neck, as the two holes for the thong or string were in that portion of the border which pointed directly to the chin or central portion of the lower jaw of the skeleton. The marks of the thong by which it was suspended are manifest upon both the anterior and posterior surfaces, and in addition to this the paint is worn off from the circular space bounded below by the two holes.

This skeleton had around the neck, arms, waist, and ankles, numerous beads of various kinds. The smaller beads were all formed of small sea-shells, represented in figure 6. This form of bead was but rarely found in the stone graves; the majority of the graves containing either no beads at all, or only the small round and oblong kinds carved out of bone and shell. About one pint of these small perforated sea-shells were found with this skeleton, and the greatest number lay around the waist, as if the body had been encircled with a belt ornamented with these shells.

This stone grave, which was about two feet beneath the surface (that is, the lid of the coffin was covered with this thickness of earth), had been constructed with such care that little or no earth had fallen in, and the skeleton rested as it were in a perfect vault.

The cranium, which from the delicacy of the bones, and especially of the jaws, was judged to be that of a female, was in a remarkable state of preservation. The skeleton was dry, and seemed to be unimpaired as far as the general shape and outlines of the bones are concerned; but these were very light, and crumbled readily when compressed, thus indicating the removal of the animal matter to a great extent. I varnished the skull immediately after lifting it out of the sarcophagus, and thus preserved it entire, with the exception of a small portion of the occipital bone, in the left side of the back of the head, where the skull rested upon the earth.

This cranium is one of the most perfect in its shape, and striking in its outline, amongst the skulls which I exhumed and critically examined, measured, and figured, of this aboriginal race. The oval of the skull is unusually perfect, the nose is high and arched, and the teeth are perfect, 16 above and 16 below, and although considerably worn by use and age, only one small cavity exists in one of the anterior molars, on the right side of the superior maxilla. The occiput is less flattened than in many other crania of this race; nevertheless, this characteristic is readily observed; and when the skull is viewed anteriorly or posteriorly, it is evident that the pressure was exerted more upon the left side than upon the right. The measurements of this specimen are as follows: facial angle 76°.5; internal capacity 75 cubic inches; longitudinal diameter 6.3 inches; parietal diameter 5.4 inches; frontal diameter 4.3 inches; vertical diameter 5.5 inches; intermastoid arch 15 inches; intermastoid line 5 inches; occipito-frontal arch 13.5 inches; horizontal periphery 19 inches; length of head and face 7.5 inches; zygomatic diameter 5.1 inches.

Fig. 9.

Image composed of dark colored clay and crushed river shells, from the stone grave of a child, on the summit of a burial and "Sacrificial" mound; on the banks of Cumberland River, opposite Nashville, Tennessee. One-fourth the natural size.

In the grave of a child, near the right side of the stone grave, the description of which has just been given in detail, and at the foot of another grave which contained a skeleton seven feet in length, and apparently of a male of great age, as manifested by the loss of the teeth, and the absorption of the alveoli, a small black image was exhumed.

The features of this image, with its straight retreating forehead and prominent nose, resemble those of the Aztec or ancient Mexican sculptures. The figure is kneeling, with the hands clasped across the breast, in the *attitude of prayer*. This object is formed of a mixture of black clay and pounded shells, and is exceedingly hard, with a smooth polished surface. It might with propriety be called a vase, as it is hollow, with the mouth or opening in the back of the head, and not at the summit as is usual with the vases of the Egyptians and Romans.

Fig. 9 represents a rough sketch of this image.

The under jaw of the skeleton of the aged mound builder, whose grave lay near that containing the black image, was of remarkable size, and had only one long tooth or fang, like the tusk of a wild animal.

On the left of the grave which contained the carved shell ornament, previously described, lay two other carefully constructed stone graves, in one of which numerous shell beads were found encircling various portions of the skeleton, and in the other a large sea conch. The interior portion or spiral of the shell had been carefully cut out, and it was probably used as a drinking vessel or as the shrine of a small idol, as had been observed by Dr. Troost. From the great distance whence these large marine shells must have been brought, it is reasonable to suppose that they were considered of great value by the aborigines.

The grave furnishing this vessel fashioned from a shell also contained two copper ornaments, lying on the side of the cranium of the skeleton. These ornaments should more properly be described as two round pieces of wood, perforated through the centre, and covered with a layer of copper. They appear to have been suspended from the ear by a thong, since the remains of small leather strings were observed in the central holes. I discovered similar ornaments of wood, but more finely carved, and covered with a thin layer of copper, in a stone grave near Nashville, at the residence of Colonel W. D. Gale. Upon the summit of the mound now under consideration, about six inches below the surface, immediately above the large circular earthen vessel, I also discovered several pieces of thin, corroded copper, which appeared to have formed originally a plate, vessel, or mask. A copper mask, which was fashioned with human features, is said to have been found in a mound near Franklin, Tennessee. From a stone grave near Lick Branch, I obtained several small, round masses of pure silver. Silver coins are said to have been found in a stone grave on the banks of the Cumberland, opposite Nashville, but after diligent inquiry, I was unable to obtain any reliable information. The wooden ornaments covered with copper previously described, were one inch in diameter, and presented the general appearance of Fig. 10.

Fig. 10.

Wooden ornament coated with copper, from a stone grave, in a mound on the bank of Cumberland River, opposite Nashville. One-half the natural size.

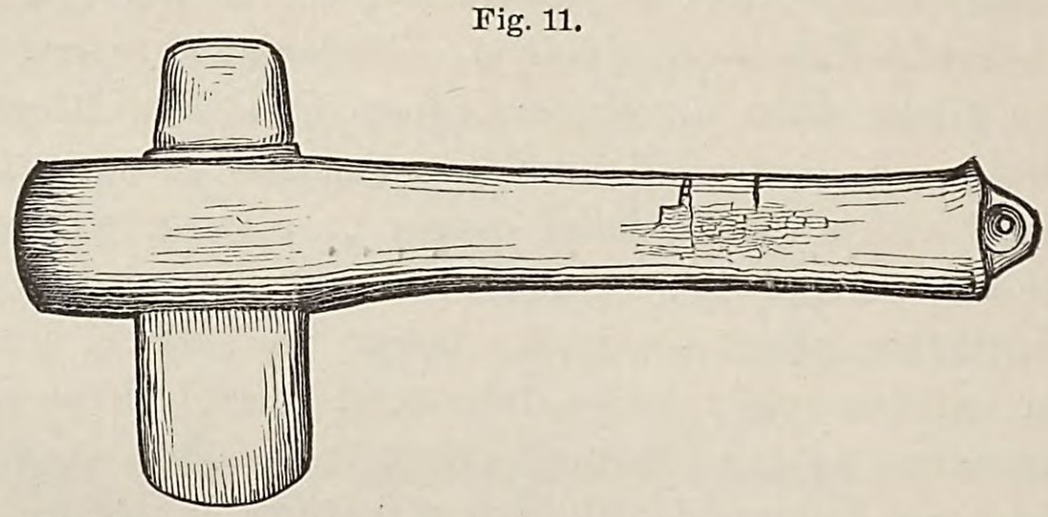
The metal was almost entirely reduced to the oxide and carbonate of copper.

Two skeletons, apparently those of a man and a woman, were found on the southern slope of the mound, near the altar: they had been interred in the earth, without any stone coffins. At the side of the female skeleton, apparently encircled by the bones of the fingers, a highly finished, light reddish-yellow vase was found painted with regular black figures. This vase is composed of light-colored clay and crushed shells: height $7\frac{8}{10}$ inches; circumference $18\frac{5}{10}$ inches. The body of the vase is divided into segments by four broad depressions extending from the base nearly to the neck. Each of the four divisions is bordered with black, and

in the centre of the circles thus formed is an inner black circular figure. This vase had evidently been subjected to the action of fire; and in its general appearance and finish compares favorably with the best Mexican and Peruvian vases that have come under my observation.

Under the head of the male skeleton I found a carefully fashioned and highly polished stone hatchet, with a double edge, and with the entire handle and ring carved out of a compact chloritic stone. On each side of the top of the handle are three grooves. A reduced drawing of this warlike weapon, which is one of the most beautiful and perfect stone implements ever exhumed from the aboriginal remains within the limits of the United States, and which appears to constitute a special type, differing from both American and European stone implements, is represented in Fig. 11. Length 13.5 inches; blade between the edges 6.1 inches; greatest width of the blade 2.5 inches; greatest width of the handle 2 inches; least width of the handle 1.5 inches.

Fig. 11.



Double-headed stone hatchet or battle axe, formed of green chloritic stone, exhumed from a mound on the bank of the Cumberland River, opposite Nashville.

A row of graves extended around the inner circle, which we have described as radiating from the altar. The stone coffins of this outer circle lay at right angles to those of the inner circle, and rested as it were at the feet of the more highly honored dead. In the outer graves no ornaments were found, and only a few arrow-heads and fragments of shells and pottery. The arrow-heads are very small, and most carefully fashioned with very sharp points. Fig. 12 represents one of these flint arrow-heads.

Fig. 12.

Arrow-head from a stone grave. One-half the natural size.

The crania from this outer circle are, as a general rule, larger and more compressed than those of the inner circle. The flattening of the occiput varies also within very wide limits. These differences were accurately indicated by the numerous photographs and outline drawings transmitted to the Smithsonian Institution in connection with the account of these explorations.

In the outer circle of this mound I exhumed the largest cranium that I was able to obtain in a perfect state from the stone graves; the internal capacity being 103 cubic inches; horizontal periphery 20.8 inches; intermastoid arch 16.8 inches;

occipito-frontal arch 15.7 inches; parietal diameter 5.9 inches; frontal diameter 4.8 inches; intermastoid line 5.3 inches; diameter of face and head 7.8 inches; zygomatic diameter 5.5 inches. The facial angle also is above the mean of the crania of this ancient race, being 81°. Dr. Samuel G. Morton, in his "Crania Americana," gives the following as the results of his measurements of the internal capacity of the cranium in the different races of men: Caucasian, in 52 skulls, the mean internal capacity in cubic inches was 87, largest in the series 109, smallest 75; Mongolian, in 10 skulls, mean 83, maximum 93, minimum 69; Malay, in 18 skulls, mean 81, maximum 89, minimum 64; American, in 147 skulls, mean 82, maximum 100, minimum 60; Ethiopian, in 29 skulls, mean 78, maximum 94, minimum 65. Upon comparison, it will be found that the internal capacity of the skull now under examination is greater than any one of the 204 Mongolian, Malay, American, and Ethiopian skulls examined by Dr. Morton, and is less than the largest Caucasian by only 6 cubic inches. The skeleton was over six feet in length, and the bones of the extremities were well formed and powerful.

Whilst the occiput of this cranium is somewhat flattened, its shape is more symmetrical, and the oval of the head more perfect, than in the majority of the crania from the stone graves. Two intercalated bones are situated at the junction of the occipital and parietal bones. The lower jaw is massive and coarse, and the teeth are somewhat worn and free from decay. The cranium from the adjoining grave is well formed and large, and bears a striking resemblance to the one just described. As the graves lay side by side, we judged that the individuals to whom these crania belonged may have been related during life. The teeth are well worn and somewhat decayed. The back of skull is more flattened on the left side than on the right; this has caused a greater prominence of the left side of the forehead, whilst the parietal protuberance is more marked, and situated further back on the right side. The effect of this unequal pressure during childhood, or rather just after birth, was to destroy the symmetry of the entire cranium, to alter the position of the foramen magnum, to throw the articulations of the lower maxilla out of the right line, and also to render one side of the face more prominent than the other. Even the symmetry of the lower jaw was destroyed by this pressure, the rami being separated more widely apart than in normal crania, and each ramus presenting a different angle and different length. This cranium, also, is one of the largest and most massive, as will be seen from the following measurements: facial angle, 80°; internal capacity, 90 cubic inches; longitudinal diameter, 6.9 inches; parietal diameter, 5.6 inches; frontal diameter, 4.3 inches; vertical diameter, 6 inches; intermastoid arch, 15.7 inches; intermastoid line, 4.8 inches; occipito-frontal arch, 14.8 inches; horizontal periphery, 20.3 inches; diameter of face and head, 7.6 inches; zygomatic diameter, 5.5 inches. Many of these crania had evidently been subjected to considerable pressure during their early growth; and the pressure appears to have been exerted both upon the occipital and frontal bones. In the cranium, the outlines of which are given in Figs. 13 and 14, I observed that the effects of pressure had been so marked as to render the parietal diameter actually greater than the longitudinal diameter; as will be seen from the following measurements: longitudinal diameter, 6.1 inches; parietal diameter, 6.4

inches; internal capacity, 92 cubic inches; frontal diameter, 4.4 inches; vertical diameter, 6 inches; intermastoid arch, 16.5 inches; intermastoid line, 5.4 inches; occipito-frontal arch, 13.8 inches; horizontal periphery, 19.8 inches.

Fig. 13.

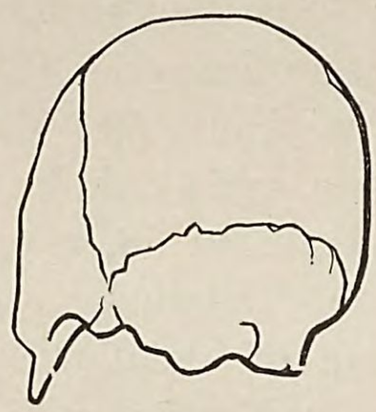
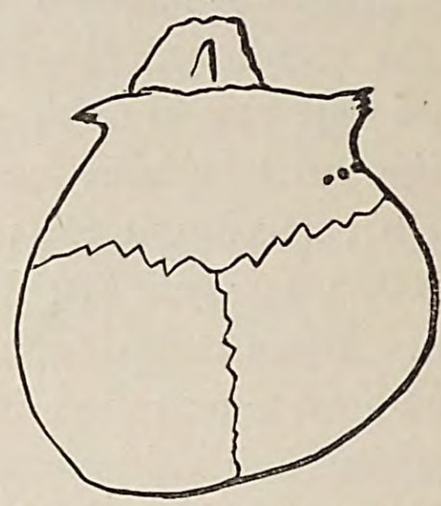


Fig. 14.



Figs. 13 and 14, outlines of a cranium, from a stone grave in a mound on the banks of the Cumberland River, opposite Nashville.

In the general outline, this cranium bears a marked resemblance to that of the Natchez, figured and described by Dr. Morton in his "Crania Americana," pp. 160–161, Plates XX and XXI. The effects of artificial compression were also visible in another well preserved cranium from a stone grave in the same mound, which afforded the following measurements: facial angle, 75°; internal capacity, 78 cubic inches; longitudinal diameter, 6.1 inches; parietal diameter, 5.7 inches; frontal diameter, 4.3 inches; vertical diameter, 5.6 inches; intermastoid arch, 15 inches; intermastoid line, 5.2 inches; occipito-frontal arch, 13 inches; horizontal periphery, 19 inches; diameter of head and face, 7.3 inches; zygomatic diameter, 5.3 inches.

Graves also extend to the river's edge, many of which are uncovered from time to time by the crumbling of the sandy bank; the remains consisting of shells, bones, pottery, and implements of various kinds, precipitated along the shores of the river below.

Fig. 15.

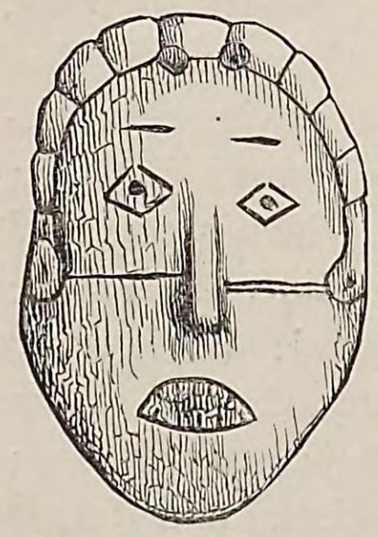


Fig. 15, shell ornament from the stone grave of a child, at the foot of a mound on the banks of Cumberland River, opposite Nashville.

From the grave of a child, near the brink of the river, I took a small shell ornament, carved in the shape of a human countenance (Fig. 15).

The cranium of this child was removed with great difficulty from its stone coffin. This skull exhibits, in a marked manner, the effects of compression on the soft bones of the infantile cranium. The occiput is greatly flattened, and the bones yielding laterally to the growing brain, the parietal diameter actually varies but little from the longitudinal. The effects of compression on this cranium will be rendered evident by the following measurements: longitudinal diameter, 5.8 inches; parietal diameter, 5.6 inches; frontal diameter, 3.5 inches; vertical diameter, 5 inches; intermastoid arch, 14 inches; occipital arch, 12.4 inches; horizontal periphery, 16 inches.

I have examined, *in sitû*, a large number of crania belong-

ing to children of various ages, and have concluded that the effects of pressure upon the bones of the cranium were much more marked in infancy, and that the marks or effects of pressure disappeared to a certain extent with the advance of years.

In the graves of several small children, adjacent to the one just described, I found the bones of birds and small animals. These small stone coffins were discovered near the river bank, about twenty feet from the foot of the mound.

About fifty yards higher up the Cumberland, and evidently connected with the mound previously described, are two smaller mounds, about forty feet in diameter, and about four feet high. These contained stone graves irregularly arranged, but no central earthen vessels, corresponding to that which we have designated as the *sacrificial altar*.

The graves which I opened contained no ornaments of any kind.

Several of the skeletons in these mounds bore unmistakable marks of the ravages of syphilis. In one skeleton, which appeared to manifest in the greatest degree the ravages of this fearful disease, the bones of the cranium, the long bones of the arm (the humerus, ulna, and radius), and the long bones of the thigh and leg (the femur, tibia, and fibula) bore deep erosions, nodes, and marks of severe inflammatory action. Many of the long bones were greatly thickened, presenting a nodulated, eroded, and enlarged appearance. When sections were made, they presented a spongy appearance, with an almost complete obliteration of the medullary cavities. The specific gravity of the bones was diminished, and the microscopical characters were in all respects similar to those of undoubted cases of constitutional syphilis, which I have observed in my hospital and civil medical practice. Every competent medical observer to whom these bones have been submitted, has concurred in the view that syphilis is the only disease which could have produced such profound and universal structural alterations.

I found a stone hatchet, and numerous arrow- and spear-heads, on the surface around these mounds. While examining the banks of the river in the neighborhood of these mounds, I observed strata of ashes and charcoal, pieces of shell and flint, stone implements, and numerous fragments of pottery: the fields around also abound with fragments of pottery, shells, stone implements, and splinters of flint. These remains indicated the occupancy of this locality for a considerable length of time by the aborigines.

After the most careful examination and comparison of the bones in the mound containing the large earthen vase or central "sacrificial altar," I failed to detect any marks of syphilis, whilst the traces of this disease were manifest in the bones of the two smaller mounds, which appear to have been the receptacles of the dead of the common people of the tribe or nation. The presence of syphilitic nodes, and marks of syphilitic ulcerations in these bones, is not only of interest in its medical aspect, but also in its bearing on the probable age of these remains. If this disease was unknown to the aborigines in this portion of America until its introduction by the Spaniards, then we have here evidence that the *stone grave race* of Tennessee were living at the time of the discovery and exploration of the North American continent by the Spaniards. This view of the question would lead to

the supposition that some of the stone graves had been made by the aborigines not more than three and a half centuries ago.

In all my research I found no implement of European manufacture within and around the mounds. The only metal discovered was copper, in the form of a thin plate, much corroded, and the thin coatings of the wooden disks, which we have described at length. No implements of iron or of any other metal were obtained.

It is worthy of note that whatever may have been the offices to which this mound had been applied, it was completed by its builders. Thus, even the ashes upon the "altar" had been carefully covered over with fragments of the pottery; and the altar as well as the graves was carefully covered with earth.

Whilst standing in the midst of these ancient "stone coffin" graveyards I have often been impressed with the belief that some fatal disease or wide-spread pestilence may have had much to do with the extinction of this once populous nation, and the filling of these extensive burying-grounds.

Across the Cumberland River, below the mouth of Lick Branch, on the same side as the city of Nashville, another mound once stood which has since been levelled in the formation of streets and in building North Nashville.

I am informed by some of the old citizens that stone graves occupied the base and flanks of the mound, and that various relics, such as vases, and spear- and arrow-heads, were exhumed, and I obtained a large flint instrument shaped like a chisel, which was said to have been taken from a stone grave within the mound. The edges were highly polished as if it had been used in various mechanical operations. This implement is represented in Fig. 16, reduced to about one-fourth the natural size; its length being 9½ inches and its breadth 2 inches.

Fig. 16.

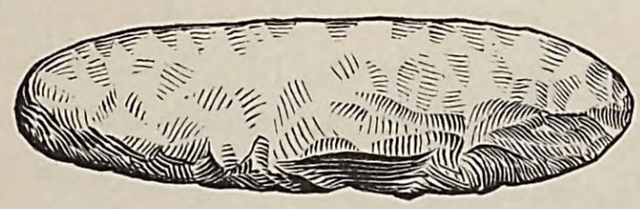


Fig. 17.

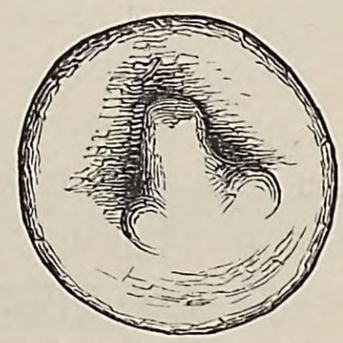


Fig. 18.

Fig. 16. Stone implement from a stone grave in a mound in Nashville, Tennessee, one-fourth the natural size.
Fig. 17. Disk composed of crushed shells and clay, one-half the natural size, from a stone grave, Nashville.
Fig. 18. Knobbed surface of the clay disk.

The singular disk composed of clay and crushed shells, represented in Fig. 17, with a handle divided into three parts, was said to have closed the mouth of a large clay jug or vase exhumed from the centre of the summit of the mound around which were ranged stone coffins.

The reverse surface of this and other similar disks was knobbed, as in Fig. 18.

A large disk of this character, composed of clay and crushed shells, which I found near the mounds on the banks of the Cumberland, opposite Nashville, was furnished with a large handle which could be readily grasped with the hand. The surface was much worn, as if the implement had been used for crushing corn,

or rubbing paint, or smoothing the skins of wild animals. I also obtained several highly polished disks of silex from the same localities, which were probably used for similar purposes. These implements may have been employed for grinding paint or crushing corn in the biconcave stone disks, cups, paint bowls, or mortars, which abound in all parts of the valley of the Cumberland and other rivers of Tennessee, one of which, found in the neighborhood of Nashville, is represented in Fig. 19.

Fig. 19.

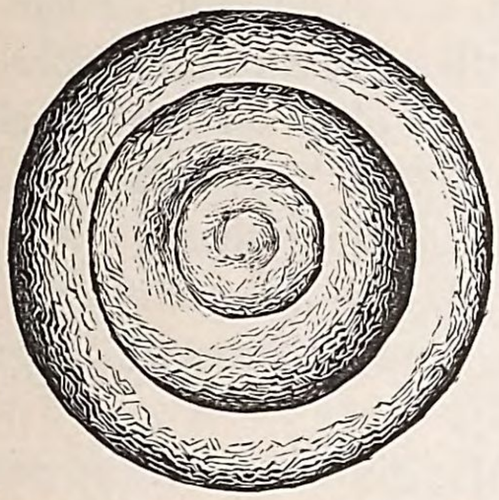


Fig. 20.

Fig. 19. Biconcave stone disk, cup, paint bowl or mortar, from a stone grave, Valley of Cumberland River, one-fourth the natural size.

Fig. 20. Celt from a stone grave within the limits of North Nashville. This highly polished stone chisel or wedge is ten inches in length, and is formed of a hard siliceous stone containing fossil remains.

I obtained numerous chisels or celts from stone graves within and around the limits of Nashville, one of the most perfect of which is represented in Fig. 20.

It appears from the testimony of John Haywood, in his "Natural and Aboriginal History of Tennessee," that the mound formerly standing within the limits of North Nashville was carefully examined by Mr. Earle, in 1821, and that, to a certain extent, the structure was similar to that of the mound which I explored directly across on the opposite bank of the Cumberland.

This is said to have been the mound upon which Monsieur Charleville had his store in 1714, when the Shawnees were driven from Cumberland by the Cherokees and Chickasaws. On the 21st of July, 1821, Mr. Earle employed men to work this mound near Nashville, then standing on the ground of David McGavoc, Esq. The mound is described as standing on the west side of the river, and on the north side of French Lick Creek, and about 70 yards from each; being round at the base, about 30 yards in diameter, and about 10 feet in height. The workmen opened a circular hole about the centre of the summit, and a ditch was dug from thence to the western extremity. They found pottery of Indian fabrication everywhere within the mound; and two or three feet beneath the summit, the jaw-bone of a carnivorous animal, and small fragments of bones, whether human or not could not be determined. About four feet below, they came to a layer of charcoal, or rather black cinders, about two inches deep, extending from the central hole 8 or 10 feet towards the west, and exhibiting an appearance which made it probable that the dirt in which it lay was once the top of the mound, and had been flattened and a large fire made upon it; and that afterwards the mound had been raised higher by the accumulation of fresh dirt. This dirt

was black, rich, and very fine, and seemed to have been brought to it in pots, the fragments of which were seen through every part of the mound. About four feet below the layer of cinders the workmen took up the tooth of a carnivorous animal, and an arrow-head of flint very neatly shaped into an acute-angled triangle. When they began the central hole they came upon some flat rocks, partly covered. After raising them, and digging about a foot below, they found a piece of metal of an oval form, about the size of a ninepenny piece of silver, but more than twice as thick, with an indented representation of the head of a woman on one side. It is supposed to have been of European manufacture, and resembled a watch seal. This medal was found beneath where the house of Mr. Charleville stood in 1714, and for many years before. This mound also had been stockaded by the Cherokees between the years 1758 and 1769. Very large burying-grounds once lay between the mound and the river, extending thence westwardly to the creek. The vast extent of the burying-ground, and the great number of interments, induced the belief that a population once resided here which greatly exceeded that of the present day.

Caleb Atwater, in his "Description of the Antiquities discovered in the State of Ohio and other Western States," has given the figure of an image found in a tumulus near Nashville, and deposited in the Museum of Mr. Clifford, of Lexington, Kentucky.[1] This object represents a man in a state of nudity, whose arms have been cut off close to the body, and whose nose and chin have been mutilated. Upon the head is a fillet and prominence. In these respects, as well as in the peculiar manner of plaiting the hair, it resembled an image found by Professor Pallas, in his travels in the southern part of the Russian Empire.[2]

The Nashville image was made of a clay peculiar for its fineness, which is quite abundant in some parts of Kentucky. With this clay was mixed a small portion of gypsum.

A medium sized pyramidal mound, about seventy feet in diameter at the base and about fifteen feet high, with regular angles, is situated near the Franklin Pike, about two and a half miles from Nashville, upon the slope of a hill overlooking the valley of Brown's Creek. As far as my examination extended, this mound was in like manner used for religious purposes. Numerous stone graves have been found in the vicinity, and a number of relics obtained. A number of stone graves were exposed by the earthworks hastily thrown up by the Confederate troops under the command of General Hood, in the field adjoining this mound.

One of the relics discovered in this locality was described as a water vessel, in the form of a circular hollow tube, the inner circle being large enough to go over the head. It was thought that this earthen vessel was so constructed as to be carried around the neck, the weight resting on the shoulders.

A gentleman who once resided near this mound presented to me a small iron hatchet or tomahawk, much corroded, which was said to have been exhumed from a stone grave in this locality by an aged negro man. As this was the only iron

---

[1] Archæologia Americana, vol. i. p. 210.
[2] Pallas' Travels, vol. ii. Vignette, No. 11.

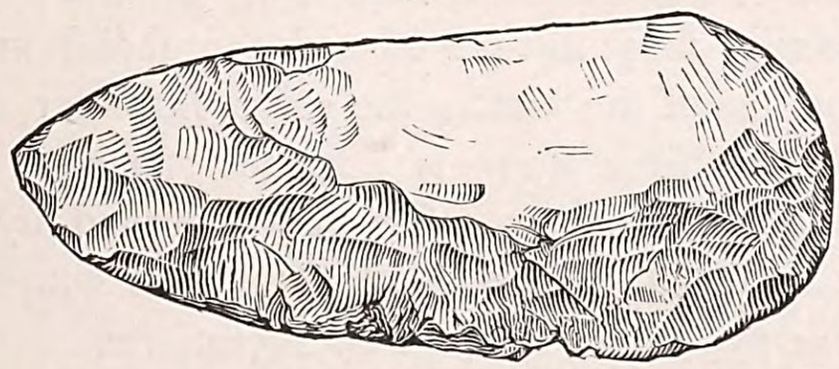
implement which had ever come into my possession in connection with the stone graves and mounds, I made a careful search for the old negro, but he had either died or had removed to some other place, and it was impossible for me to form any judgment as to its connection with the stone grave race, as it might have been deposited or lost in the field by the Cherokees or Chickasaws, who inflicted much damage on the early settlers in the Cumberland Valley.

Nine miles from Nashville, near the White Creek Road, on the farm of Mr. Dixon, I examined numerous stone graves lying on the western slope of a high hill. These graves were of various sizes, from that just large enough for a new-born babe to that long enough for the skeleton over six feet in length. As was usually the case in other stone grave burying-grounds, the small graves were constructed of thin slate, and the sides were parallel; whilst in the large graves the side slabs approached each other towards the foot. The greatest width of the long graves was in that portion occupied by the shoulders and thorax of the skeleton. The general outline of many of these long graves, therefore, resembled that of the modern coffin. Although this ancient cemetery had been long cultivated, the stumps of several large trees were still standing, and beneath the roots of a very large poplar, and partially covered by the central trunk, lay the grave of a small infant, most carefully constructed of flat rocks. The stump of the tree had been partially consumed by fire, but from its great size, and the numerous rings remaining, I judged that it must have been at least two centuries old at the time of its destruction.

Stone-hatchets, arrow-heads, vases, fragments of pottery, and several large stone implements, which appear to have been used as spades and hoes, have been exhumed from time to time during the cultivation of the soil in and around this ancient graveyard.

One of the largest, flat, spear-shaped implements, ten inches in length and four inches in breadth, is represented in Fig. 21, greatly reduced in size.

Fig. 21.



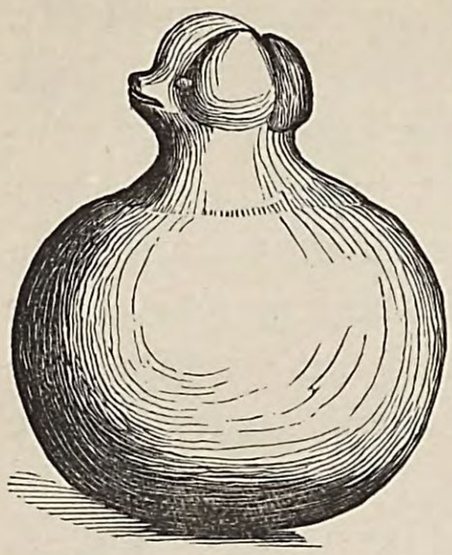
Stone implement of silex, from an ancient burying-ground near the White Creek Road, on the farm of Mr. Dixon, nine miles from Nashville.

From a large stone grave in this locality a remarkable vase, composed of black clay and crushed shells, was obtained. The neck terminated in the head of some animal which bears a striking resemblance to a raccoon. This vessel is 7.7 inches in height and 20.2 inches in circumference. The large oval portion appeared to have been fashioned first, and then the neck and head were joined, the place of union being distinctly visible. Although this vase is of remarkable symmetry, it

does not appear that the potter's wheel was used in its construction. It had evidently been subjected to the action of fire.

This specimen, which was called by the farmers in the vicinity where it was found an "*Indian canteen*," is represented greatly reduced in Fig. 22.

Fig. 22.



Black vase from an aboriginal cemetery, nine miles from Nashville.

It is probable that this vessel, as well as others to be described hereafter, had some symbolical significance relative to the tribal name, or to certain religious rites. It is well known that the tribes of certain Indian nations, as those of the Creeks and Iroquois, adopted some animal, as the bear, fox, or panther, or some bird, as its tribal representative. As far as my explorations extended, these vases, fashioned in the similitude of animals, were not common, not more than one or two being found in each burial mound.

The stone grave from which the vase just described was taken was of large dimensions, and contained the bones of two individuals. One of the crania was in a pretty good state of preservation, the other was destroyed during its extraction. This cranium is pyramidal in form, with a flat occiput, with a broad elevated forehead and long parietal diameter, and resembles very closely the skull of the Natchez, described and figured by Dr. Morton.[1] The marked flattening of the occiput, and the square pyramidal form of the cranium, could only have resulted from artificial pressure during the plastic state of the bones in early childhood. The effects of occipital compression in this pyramidal cranium will be rendered evident by the following measurements: facial angle, 80°; internal capacity, 78 cubic inches; longitudinal diameter, 6 inches; parietal diameter, 5.6 inches; frontal diameter, 4.4 inches; vertical diameter, 5.4 inches; intermastoid arch, 14.6 inches; intermastoid line, 5.1 inches; occipito-frontal arch, 13.2 inches; horizontal periphery, 18.9 inches; diameter of head and face, 7.2 inches; zygomatic diameter, 5.2 inches. The absence of teeth from the superior maxilla may have rendered the facial angle greater than it actually was before the loss of the teeth; the error, however, cannot be considered as very great. In this cranium there is a vacant space at the junction of the occipital and parietal bones which was formerly occupied by a small intercalated bone, referable to the occipital. This peculiarity is so common in the skulls of this ancient race as to constitute a marked characteristic.

On the high hill which rises above the stone grave cemetery on the farm of Mr. Dixon, we observed a number of large circular depressions which had evidently been the sites of aboriginal habitations or wigwams, and there were also some traces on the crest of the hill of an ancient earth-work. About one mile beyond the high hill is a noble spring, which has been noted for its unfailing supply of pure, cold water ever since the settlement of this country by the Anglo-Americans.

---

[1] Crania Americana, pp. 157–162, Plates XX and XXI.

The small hill, from the foot of which this spring issues, is covered by a burial mound containing numerous stone graves.

In other mounds which I have examined, by sinking large trenches and wells through the centre, layers of ashes and fragments of bones, many of which were charred and apparently both human and animal in their origin, were found mingled with ashes upon hard baked surfaces. Such mounds appeared to have been used solely for the incineration of the dead and for religious purposes.

At Sycamore, twenty-two miles from Nashville, down the Cumberland River, in Cheatham County, I examined a large number of stone graves, and also several small mounds, which were not more than ten feet in diameter, and three feet high. These consisted of an exterior layer of sand and earth, next a convex layer of flat rocks, and beneath this, ashes, charcoal, and human bones. It appeared that the bodies had been burned upon the surface of the earth and covered over with flat rocks, and the whole covered with earth.

In the neighborhood of the stone fort, near Manchester, I observed several piles of rock about eight feet in diameter, and from one to two feet in height. When these were removed they were found to have rested on ashes and charred bones.

CHAPTER IV.

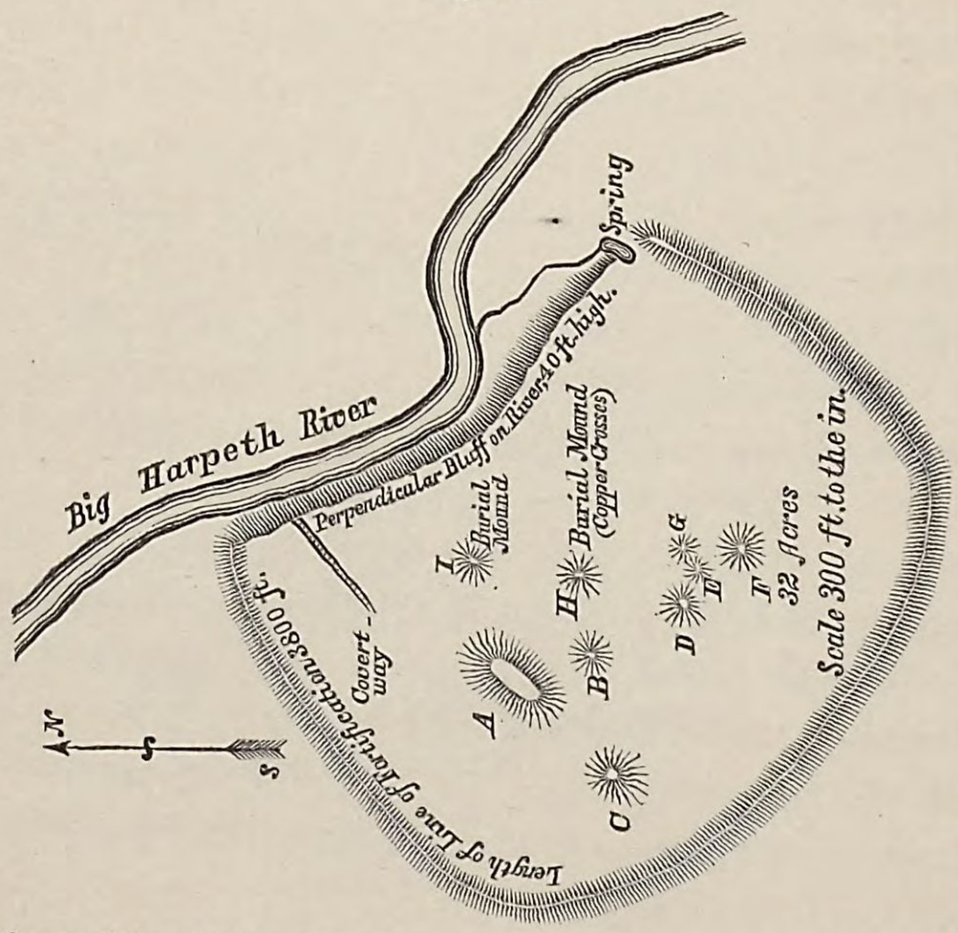
EARTHWORKS ON THE BIG HARPETH RIVER.

On the southwestern side of Big Harpeth River, about two and a half miles from Franklin, Tennessee, on the plantation of General M. F. De Graffenreid, the vestiges of an ancient ditch and embankment are still visible, inclosing about thirty-two acres of land.

The earthwork, which is 3800 feet in length, is in the form of a crescent or semicircle, with the ends resting on an impassable, almost perpendicular bluff of the river, rising about 40 feet from the water's edge. The land slopes gradually away from the earthwork. The situation was admirably chosen for defence and for the maintenance of a protracted siege, as there is an abundant supply of drinking water, and the soil of the inclosure is of great fertility. Although the site of this ancient town has been under cultivation for a number of years, it still yields abundant crops of corn and cotton.

Within the earthworks are nine mounds; the largest, marked A in the following plan, figure 23, resembling a parallelogram, the sides and angles of which have been rounded by the ploughshare, is 230 feet in length, 110 feet in breadth, and 16 feet in height; the remaining mounds vary from 100 to 25 feet in diameter, and from 1 to 4 feet in height.

Fig. 23.



Plan of works, and relative position of the mounds, on the plantation of General M. F. De Graffenreid, on Big Harpeth River, about two and a half miles from Franklin, Tennessee.

DIMENSIONS OF THE MOUNDS.

A.	Long	Diameter,	230	feet;	Short	Diameter,	110	feet;	Height,	16	feet.
B	"	"	66	"	"	"	33	"	"	2	"
C.	"	"	66	"	"	"	50	"	"	$2\frac{1}{2}$	"
D.	"	"	66	"	"	"	50	"	"	2	"
E.	"	"	25	"	"	"	10	"	"	1	"
F.	"	"	100	"	"	"	66	"	"	1	"
G.	"	"	30	"	"	"	30	"	"	2	"
H.	"	"	50	"	"	"	33	"	"	3	"
I.	"	"	40	"	"	"	35	"	"	$2\frac{1}{2}$	"

When the ground inclosed by the earthwork was cleared about forty years ago, the mounds and ditch are said to have been covered with large trees, equal in size and age to those in the surrounding forests. A white-oak four feet in diameter is said to have stood in the ditch. There were seven "passways" over the works, at convenient distances from each other, and about eight feet wide, as long as the earth remained as the aborigines had left it. At that time, the ditch was five or six feet wide, and three or four feet deep. The earth forming the embankments appears to have been thrown upon the outside, so that the ditch was within the line of fortifications. Both the earth-wall and ditch have been greatly altered by the weather and by the ploughshare; so that at present they are in some places scarcely visible, and it is impossible to determine either the original height of the one or the depth of the other. Near where the entrenchment strikes the river-bank, at the commencement of the steep bluff, is a large and never-failing spring of excellent water. At another portion of the inclosure, indicated on the plan, there is a covert-way, or ditch, leading to the bluff, and down through a crevice to the river's edge.

The large, oblong mound A had no stone graves in its upper layer, but a shaft sunk into its centre, through its entire depth, revealed near the bottom and close to the original surface of the earth, a hard, red, burned surface, or altar, with ashes and charcoal resting on it. It appears that the mass of earth composing the mound had been erected upon the altar.

The four next largest mounds (B, C, D, and F) in like manner contained no stone coffins or human bones, but appeared to have been used for similar purposes as the large oblong mound; the interior giving evidence of having been burned with very hot fires, the red burnt stratum resembling bricks in hardness, so that it was possible to dig out with a pick-axe compact pieces of it a foot thick.

The burial mounds were four in number and smaller in size, and lay between this outer chain of sacrificial mounds and the river.

Only three or four stone graves were found in E and G, and these contained nothing of interest in the nature of relics, except a few common earthen vases which were in every case broken into small fragments.

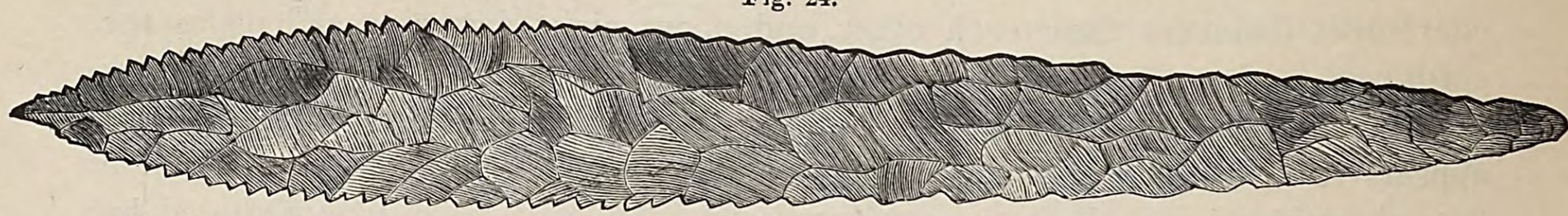
The two burial mounds marked H and I, and nearest the largest oblong mound, contained a number of carefully constructed stone coffins, the lids of which were about a foot beneath the surface of the ground.

Remarkable and interesting relics were obtained from these two mounds. The

one marked H was thoroughly explored, the earth being removed and its entire contents laid bare.

In the centre of this mound was a carefully constructed *octagonal* stone grave, 3.5 feet deep, 4 feet in the longest, and 3 feet in the shortest diameter, walled around with eight large flat limestone slabs, standing on edge. This grave contained a skeleton which appeared to have been buried in a sitting posture; the head had fallen down upon the lumbar vertebræ; the arms rested at the sides; and the legs were crossed in front. On the right side lay a long dark-brown silex implement or weapon (spear-head, or sword-blade?), 22 inches in length, and 2 inches in width at the broadest portion, being abruptly pointed and serrated at the cutting end, and tapering at the handle (Fig. 24). The edge of this formidable "*stone sword*" was uppermost, and the bones of the fingers rested around the tapering portion or handle.

Fig. 24.



"*Stone sword*," or spear-head, from the ancient earthwork, on the Big Harpeth River. About one-fourth the natural size.

This appears to be the largest and most perfect chipped stone implement of this kind ever discovered either in America or elsewhere.

During the summer of 1870, I carefully examined the collections of antiquities in the museums of Paris, London, Liverpool, Cambridge, Oxford, and Edinburgh, but found no stone implements equalling in size and perfection the "stone sword" just described, and the battle-axe with the stone handle, which I exhumed from the mound on the banks of the Cumberland, opposite Nashville. Many forms of stone implements are common to both Europe and America. Thus I obtained a stone celt from the bed of the Thames at London, and another stone implement of a similar character from the bed of the Seine, in the heart of Paris, formed of hard, semi-transparent light-pink jasper. Upon comparing these implements with hundreds of similar ones which I have seen and collected in various portions of the United States, I have been able to discern little essential difference, either in the appearance or in the probable use. The London celt is probably older than the Christian era; for, although the true date of the origin of London is unknown, no doubt can be entertained that it was founded in times long prior to that period. The stone celt from the Seine dates back perhaps to the days of the Parisii, for it was found in the bed of the river.

The European stone celts were, no doubt, used for various purposes, such as crushing bones, cutting small limbs of trees, excavating boats, felling trees, and for warlike purposes; and were bound to handles of wood after the methods practised by the North American Indians. Both in Europe and in America, the stone implements were frequently perforated; and the perforation was probably accomplished in a similar manner, that is, by whirling a stick in a cavity kept constantly supplied with wet sand. Upon careful comparison, I concluded that

the stone hammers, battle-axes, spear and arrow-heads, fashioned by the aborigines of Tennessee, were, as a general rule, superior in workmanship and beauty of shape to those which I saw in Europe.

An earthenware vessel about seven inches high, composed of clay and crushed shells, rested on its base, near the pelvic bones, on the left side of the skeleton, in the central hexagonal grave, as if the left hand of the deceased had been placed around its neck. Two large sea-shells, one of which was much decayed, lay on the right side of the skeleton. The interior surface of these shells had been painted red, and the exterior had been marked with three large circular spots.

Around this central octagonal grave were ranged nine other stone graves. In one constructed like a coffin, about seven feet in length, extending directly from the head of the central grave, four copper crosses, or rather copper plates with a cross stamped on each of them, were exhumed, resting on the cranium of an individual, who appeared, from the worn condition of the teeth and the alveoli of the upper and the lower jaw-bone, to have died at an advanced age. The copper, during its slow oxidation, had stained the bones of the cranium to a deep green color. In their general outlines two of these copper plates, resembled the human figure. Small holes in the ends of the plates seemed to indicate that they had been worn suspended from the ears, or around the neck. At the time of the destruction of my dwelling by fire, in Nashville, in 1867, I had the misfortune to lose three of these relics. The remaining one now in my possession is shown in Fig. 25.

Fig. 25.

Copper plate with a cross stamped in the centre, from a stone grave in a burial mound on the Big Harpeth River, 2½ miles above Franklin, Tennessee, one-half the natural size.

These copper plates were evidently too thin and delicate to be used for any other purpose than as ornaments.

This grave also contained a remarkable vase (Figs. 26 and 27) made of a light yellow clay and crushed river shells, on the sides of which were painted in dark brown, almost black pigment, three crosses, each inclosed in a circle, outside of which is a circular band, and beyond this a ring consisting of ten scallops. The body of the vase was accurately divided by three circular bands of black

Fig. 26.

Fig. 27.

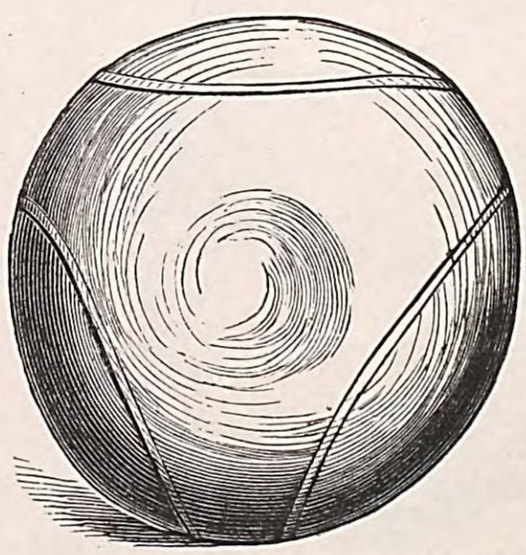


Fig. 26. Yellow clay vase with powdered shell dégraissant, from a stone grave in a burial mound within the ancient inclosure on the Big Harpeth River, two and a half miles above Franklin, Tennessee. One-fifth size.

Fig. 27. Bottom of the vase represented in the preceding, Figure 26, showing the continuation of the black pigment circles on the body of the specimen. About one-fourth the natural size.

pigment, uniting at the base and neck. The summit terminates in a bulb-shaped mouth. The height of this vessel is $9\frac{3}{4}$ inches; circumference of the neck 6 inches; circumference of the body 24 inches.

This grave was partially covered with the stump and roots of a large tree, which we judged from an examination of the remaining portion not to have been less than two centuries old at the time of its removal, about twenty years ago.

On the west of the central grave a stone grave, eight and a half feet long and widest at the head, was found, inclosing a large skeleton with the feet toward the east. A singular vessel fashioned in the shape of a child's foot and leg, with the aperture in the heel, and with a protuberance in the rounded surface encircling the thigh, lay on the left side of the skull. This vase appears to have been painted, but it was impossible to make out the markings, and in washing off the adherent earth the faint lines disappeared. Its height is 8.6 inches.

A small stone grave by the side of the one just described contained the skeleton of a child only a few years old at the time of its death, and also the following relics:—

Four large sea-shells, one on each side of the skeleton, another at the foot, and the fourth, a large specimen with the interior compartments cut out and the exterior surface carved, covered the face and forehead of the skull (Fig. 29). Among the markings on this shell, we distinguish triangles, parallel straight lines,

Fig 28.

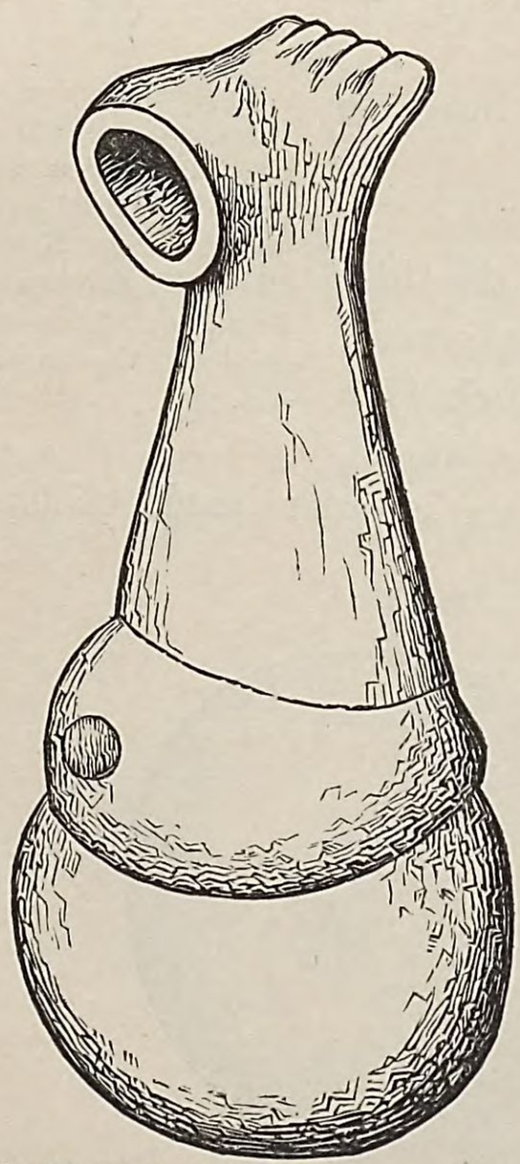


Fig. 29.

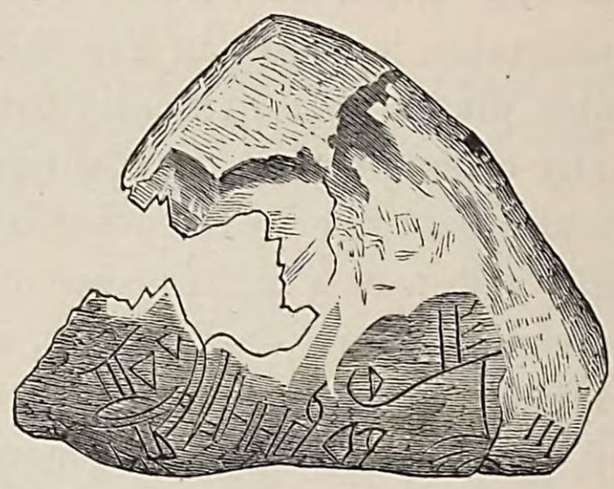


Fig. 30.

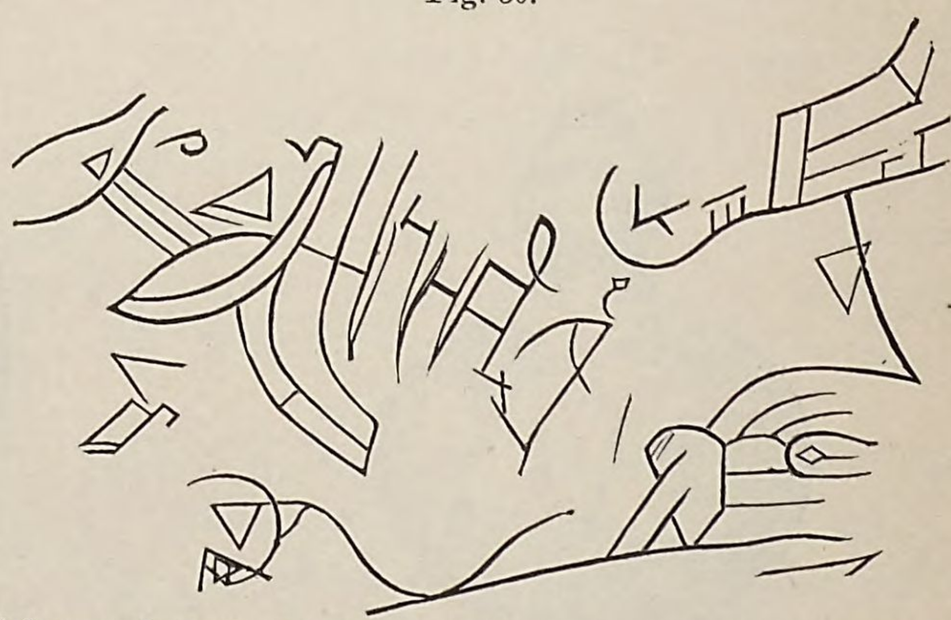


Fig. 28. Vase from a stone grave in a burial mound on the Big Harpeth River, two and a half miles above Franklin, Tennessee. One-half natural size.

Fig. 29. Carved sea-shell from a stone grave in a burial mound within the line of ancient works on the Big Harpeth River, two and a half miles above Franklin, Tennessee. About one-fourth natural size.

Fig. 30. Carvings on the sea-shell Fig. 29.

curved lines, and the human figure. Unfortunately a large portion of this specimen has been worn away by the action of the soil, and it is possible to reproduce only a small fragment of this curious record, which may have related to the history of the tribe which once inhabited this ancient town.

The lines of the carvings were copied by laying on the surface of the shell a transparent paper, and then tracing them carefully with India ink. The tracings thus obtained are represented in Fig. 30 about the natural size.

A small image rested on the left elbow of the child, facing the cranium. The general form of this specimen is similar to that of the female image which I discovered in the sacrificial and burial mound on the banks of the Cumberland, opposite Nashville. It is hollow, with a horizontal opening in the back part of the head. From the appearance of the light-colored clay and river shells of which it is composed, it had evidently been exposed to the action of fire. The vertebræ are prominent, and one of the largest is perforated, so as to admit the passage of the thong or string by which it was most probably suspended around the neck of the owner or in the temple house.

This image, four and a half inches in height, represents a pregnant woman in the crouching or kneeling posture, commonly assumed by the North American Indians; the body resting on the knees and on the feet doubled under the buttocks.

A well-made and gracefully formed water vessel, capable of holding about three pints, rested on the right side of the skull; its height is 8.5 inches, and its circumference 18 inches. A long polished bone needle or piercing instrument, 14 inches in length, lay across the breast of the child. It had been fashioned with great care from the tibia of the American deer, and was probably used for piercing leather.

The grave containing the relics just described was two and a half feet in length, and the long bones of the leg and thigh occupied a position as if the knees had been bent and the legs thrown back. The grave by the side of the one last mentioned was about six feet in length, and contained the skeleton of an adult male, the bones of which were extensively diseased as if by syphilis. The long bones of the arms, thighs, and legs were disfigured by nodes and erosions. A large conch shell carefully fashioned into a drinking vessel, and a beautiful light-red vase, similar in form, material, and painting to the one discovered in the burial mound on the banks of the Cumberland opposite Nashville, were obtained from this stone grave.

The next grave east of this, and towards the flanks of the mound, was about four and a half feet long, and contained the skeleton of an adult, the long bones of the thigh and leg being flexed on each other and on the trunk. At the right side of the head lay an oval black pot with four protuberances on the rim, somewhat resembling a terrapin in shape; height 3.2 inches, circumference 18.1 inches. A medium-sized black pot (the body of which was 5 inches in diameter, the height 4.4 inches, and the circumference 16 inches) was found resting at the foot of the grave on a pile of stone chisels or polishing instruments, and fragments of silex. Two fragments of beautiful semi-transparent jasper rested on each side of the head in contact with the temporal bones.

The next grave, passing around the mound towards the east, lay a little nearer

to the central grave, and contained a remarkably flattened and misshaped skull. This cranium is more altered by artificial pressure than that of any adult of this stone grave race which we have as yet examined. The bones were very much affected by the action of the soil, the softer and more delicate parts of the face crumbling upon the slightest touch. The flattening of the occiput is so great as to render the parietal diameter longer by four-tenths of an inch than the longitudinal. The pressure was greatest on the right side of the head, giving the cranium a deformed or one-sided appearance, in addition to the contraction of the antero-posterior diameter, and the marked increase of the lateral or parietal diameter. Thus the antero-posterior diameter of the head on the right side, measured from a point just above the superciliary ridge to a point directly across on the occiput, is 4.7 inches, and on the left side 5.4 inches. The bones of the legs of this skeleton were flexed on the thighs. At the foot of this grave lay a common black earthenware pot with two handles attached to its edge.

The grave directly across the mound from the small one in which the *image* or *idol* was found, and lying on the eastern side of the central grave, was in like manner occupied by the remains of a child a few years of age. This grave contained no relics excepting a small black pot.

The remaining two graves on the eastern flank of the mound contained the skeletons of adults, and yielded no relics besides a small black earthenware pot in each grave. The central octagonal grave contained also some scales of mica; and fragments of this substance were also found in several other graves.

We shall next present the results of the exploration of the mound lying between the eastern side of the large mound and the river, marked I on the plan, Fig. 23. The tops of the graves lay about two feet beneath the surface of the mound. The earth was entirely removed by sections so as to expose all the graves, six in number.

The centre of the mound was occupied by two graves which appeared to be the most important, and lay parallel to each other. In both of these the bodies must have been interred at full length. In the first one examined a large vase composed of light-red clay and crushed shells, and painted with black bands so disposed as to divide the body of the vase into three equal circular spaces, lay on the left side of the skull.

The ornamentation of this vase was very similar to that of the one represented in Figs. 26 and 27, excepting that the outer band has sixteen scallops, and the band inside of this has twenty-six small round spots left unpainted. The height of this vase was 8 inches; the circumference of the neck 10.7 inches; circumference of the body 26.7 inches.

Although it is very nearly symmetrical, there are certain slight defects of form which seem to indicate that it was not fashioned on the potter's wheel. This is a substantial, well-finished, and ornamental piece of earthenware, equal to the best unglazed pottery of modern times.

On the right of the skull lay a black vase or paint bowl, having on its rim a human head, which, in its aquiline nose, prolonged chin, and arched forehead,

bears a striking resemblance to the features of a Spaniard. The crown of the head is surmounted by a helmet, which presents a totally different appearance from the head-dress of the modern Indians. A small handle is attached to the opposite portion of the rim of this bowl. This small vessel was evidently used to hold paint, as it still contains red ochre. The ears of the head are bored, or rather slit, after the fashion of the North American Indians and many other savage nations, and a circular hole passes through the upper portion of the crest of the helmet. The lips are formed by an oval, ridged projection, as is usual with many Indian images and figures.

A similar head was found in Williamson County, Tennessee, in the vicinity of some large mounds, and is represented in Fig. 31.

Fig. 31.

Fig. 32.

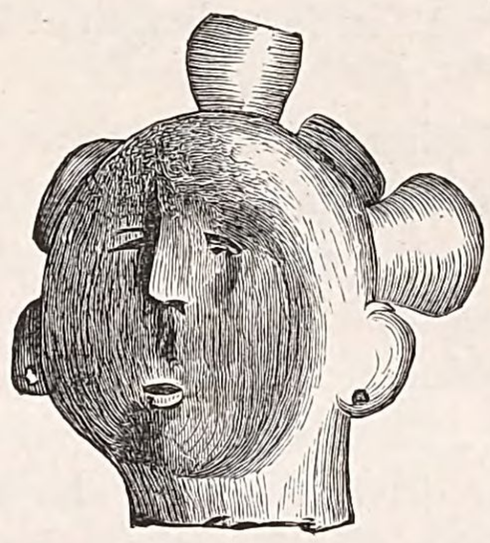


Fig. 31. Head crowned with a helmet (natural size), from a large mound in Williamson County, Tennessee.
Fig. 32. Black earthenware head (natural size), from an ancient earthwork inclosing mounds near Hickman, Tennessee.

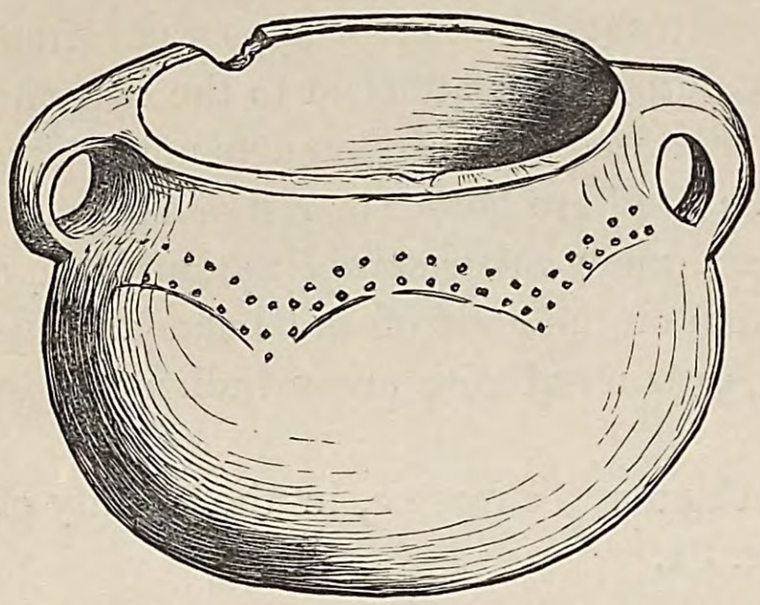
Fig. 32 represents a small black earthenware head with a round face, and crowned with small round tufts or knobs, from an ancient earthwork inclosing mounds and pyramids, near Hickman, Tennessee.

The taste and skill of this race are manifested also in the small earthenware vessels which we supposed to have been manufactured for the use and amusement of the children, such as the small reddish-yellow cup or pot, Fig. 33, which was taken from a stone grave.

These relics illustrate in a clear manner the taste and skill of this ancient race in fashioning earthenware and images; and it is evident that the artist who was capable of producing the head on the paint bowl must have attained a high degree of skill in his art.

The skull obtained from the stone grave which contained the paint bowl is square and pyramidal in its shape, with prominent superciliary ridges and nasal

Fig. 33.



Small reddish-yellow cup or pot, composed of fine clay, from a stone grave (natural size).

bones. The occiput and inferior portions of the parietal bones are flattened. The effects of artificial pressure are plainly manifest in the flattened occiput, diminished longitudinal diameter, and widely separated rami of the inferior maxillary bone. Four large Wormian bones are found along the occipito-parietal suture. The teeth are much worn. The outline of this cranium may be partially comprehended from the following measurements: facial angle, 82°; internal capacity, 80.5 cubic inches; longitudinal diameter, 6.4 inches; parietal diameter, 5.9 inches; frontal diameter, 4.6 inches; vertical diameter, 5.7 inches; intermastoid arch, 15 inches; intermastoid line, 4.9 inches; occipito-frontal arch, 14 inches; horizontal periphery, 19 inches; length of head and face, 7.3 inches; zygomatic diameter, 5.4 inches.

In the other principal grave lying alongside of the one just described, a large vase similar in appearance and size (9 inches in height and 22.5 inches in circumference) to the one described above, and similarly painted with the three crosses and concentric circles, was found on the left side of the skull. The only difference in the painting was that the points of the scallops were represented as plaited together. These markings were quite distinct when the vase was first removed from the moist earth, but were almost entirely erased when the attempt was made to wash off the adhering clay and sand. The shells mixed in this vase appear to have been slowly decomposed, and to have lost a portion of the carbonate of lime which had effloresced on the surface. This altered the pigment and destroyed its tenacity. With the exception of a few large fresh-water mussel-shells, which were much altered by time, nothing further of interest was discovered in this grave. These mussel-shells appeared from their shape to have been artificially carved, and to have been used as ornaments, and also as spoons or cups for dipping up food and drink.

The cranium from this stone grave presented the following characteristics: superciliary ridges prominent; nasal bones well developed and prominent; teeth somewhat worn and several carious; occiput flattened to a considerable extent, and the flattening greatest on the right side of the head; several small Wormian bones along the occipito-parietal suture; facial angle, 82°: internal capacity, 79.33 cubic inches; longitudinal diameter, 6.7 inches; parietal diameter, 5.5 inches; frontal diameter, 4.2 inches; vertical diameter, 5.5 inches; intermastoid arch, 15 inches; intermastoid line, 4.4 inches; occipito-frontal arch, 13.5 inches; horizontal periphery, 19.1 inches; length of head and face 7.8 inches; zygomatic diameter, 5.2 inches.

The cranium from the stone grave containing the copper crosses, which we have already described, presented the general characteristics of the crania of this ancient

race; the occiput, however, as in the preceding skull, was but slightly flattened. Although the oval of this skull, when seen in profile, is pretty good; at the same time the cranium is not symmetrical, the left portion of the occiput near its junction with the left parietal bone, as well as the inferior posterior angle of the left parietal bone, being decidedly flattened. The right parietal prominence is more marked and thrown further back than the left, which has been pushed forward, as it were, by the effects of pressure. In addition to this we have, as peculiarities of the race, the elongated frontal bone, the worn teeth, and powerful inferior maxilla.

The skull from the grave lying by the side of that which contained the copper crosses presents a little more flattening of the occiput than the one just noticed, but much less than the compressed skull from the same mound, which has been previously noticed. The pressure appears to have been greatest on the left side of the cranium. The superciliary ridge is prominent, and the nasal spine unusually long and well developed. The facial angle appears to be less than it really is on account of the prominence of the nasal spine. The general form of this cranium may be gathered from the following measurements: facial angle, 75°; internal capacity, 81.16 cubic inches; longitudinal diameter, 6.5 inches; parietal diameter, 5.7 inches; frontal diameter, 4 inches; vertical diameter, 5.6 inches; intermastoid arch, 14.4 inches; intermastoid line, 5 inches; occipito-frontal arch, 13.3 inches; horizontal periphery, 19.2 inches; length of head and face, 7.1 inches; zygomatic diameter, 5.3 inches.

In the grave lying parallel to the one which contained the vase painted with the cross and scalloped circle, and situated on the western flank of the mound, a large heavy black vase or jug was found on the right side of the skull. The neck of this vessel terminates in a cone resembling a monk's hood, and the mouth opens horizontally. Height of vase, 9 inches; circumference, 22.5 inches. At the foot of the skeleton lay a black earthenware pot or vase 6.4 inches in height, and 22 inches in circumference. This grave was only four and a half feet in length, and the bones of the leg and thigh were flexed. From a small grave lying at the foot of this, and still nearer to the outer border of the mound, were exhumed the bones of a child, and a small black earthenware bowl or pot. Towards the northern boundary of the mound, in a stone grave immediately at the foot of the two principal graves, and at right angles with them, a skeleton was found with the head towards the setting sun. The long bones are strongly marked by *syphilitic nodes.* The skull is in a good state of preservation, and presents the general conformation of the crania of this ancient race, as will be seen from the following measurements: facial angle, 77°; internal capacity, 84 cubic inches; longitudinal diameter, 6.5 inches; parietal diameter, 5.8 inches; frontal diameter, 4.4 inches; vertical diameter, 5.8 inches; intermastoid arch, 15.5 inches; intermastoid line, 5.2 inches; occipito-frontal arch, 14.3 inches; horizontal periphery, 19.9 inches; diameter of face and head, 7.4 inches; zygomatic diameter, 5.3 inches. This cranium had several indentations and nodes on the bones, as if they had been acted on during life by the syphilitic virus. The external table of the frontal bone appears to have been especially affected. The superciliary ridge is very rough and nodulated, and

the nasal bones are thickened, roughened, and rounded. The occipital bone shows the effects of pressure, which is much more marked in the right parietal protuberance, it being much fuller and thrown further back than the left. The upper extremities of the occipital bone are separated by a transverse suture about one inch in length.

I have shown by careful observations that bones taken from stone coffins and burial mounds at Nashville, Franklin, Old Town, in Tennessee, and at Hickman, in Kentucky, bear unmistakable marks of the ravages of syphilis. The supposition has been advanced that these bones presented merely "traces of periostitis," which were not due to the action of the syphilitic poison, because "it is uncommon to find shin bones of adults belonging to races clad in skins, and with the lower extremities exposed, in which there is not more or less roughness or hyperostosis along the tibial shafts." So far from these evidences of the action of syphilis being mere *traces* of periostitis, and constituting mere "roughness or hyperostosis along the tibial shafts," the bones are in many instances thoroughly diseased, enlarged, and thickened, with the medullary cavity completely obliterated by the effects of inflammatory action, and with the surface eroded in many places. These erosions resemble, in all respects, those caused by syphilis, and attended with ulceration of the skin and soft parts during life. Furthermore, the disease was not confined to the "tibial shafts;" the bones of the cranium, the fibula, the ulna, the radius, the clavicle, the sternum, and the bones of the face exhibited unmistakable traces of *periostitis, ostitis, endostitis, caries, necrosis, and exostosis.* The medullary membrane was evidently involved in many cases to an equal degree with the periosteum; the difference in the appearance of the products of the syphilitic disease being due most probably to the great quantity of fat and other loose tissues, among which the vessels of the medullary membrane run. When thin sections of these bones were carefully examined with the naked eye, and by the aid of magnifying glasses, portions were found resembling cancellous tissue from the enlargement and irregular erosions of the Haversian canals, and increase in the number and size of the lacunæ; whilst other portions presented the hardened condition known as sclerosis. I observed in these bones, and especially in those of the cranium, the various forms of osseous ulcerations which have been described by pathologists as characteristic of the action of syphilis, viz., rounded ulcerations with glazed surfaces, and with marked hardening or eburnification of the bone beneath; tuberculated ulcerations, dependent not only on periosteal deposit but upon chronic inflammation of the compact tissue itself; reticulated ulcerations, in which a network of periosteal deposit had been formed, and which had been perforated by ulcers, subsequently forming and assuming the annular type. That these diseases of the bones were not due to mechanical injury, or to exposure to cold, is evident from the fact that they were almost universally symmetrical in their manifestations; thus, when one tibia was diseased, the other was similarly affected, both as to the position and nature of the disease. In like manner both fibulæ presented similar evidences of periostitis, ostitis, and exostosis; this was true also of the bones of the forearm (radius and ulna), and of the clavicle.

The symmetrical distribution of the effects of disease on the two sides of the

osseous system could only have resulted from the action of a poison introduced into the blood, and distributed through this medium to all parts of the body.

The North American Indians not only possessed, as is well known, great powers of endurance, especially of hunger and cold, but their mode of dress protected their lower limbs admirably from injuries of all kinds, and especially from frost-bite. It is not true that they exposed the feet and legs without covering. These facts did not escape the accurate observation of Dr. Benjamin Rush.[1] Thus he says, in his "Inquiry into the Natural History of Medicine among the Indians of North America:" "I do not find that the Indians ever suffer in their limbs from the action of cold upon them. Their moccasons, by allowing their feet to move freely, and thereby promoting the circulation of the blood, defend their lower extremities in the daytime, and their practice of sleeping with their feet near a fire defends them from the effects of cold at night. In these cases, when the motion of their feet in their moccasons is not sufficient to keep them warm, they break the ice and restore their warmth by exposing them for a short time to the action of cold water." Dr. Rush adds, in a note, that "it was remarked in Canada, in the winter of the year 1759, during the war before the last, that none of those soldiers who wore moccasons were frost-bitten, while few of those escaped that were much exposed to the cold who wore shoes."

The question which naturally suggests itself is, was syphilis communicated to this ancient race by Europeans, or was the disease indigenous to the Indian race of North America? If these diseased bones demonstrate that this stone-grave race had at some former period received syphilis from Europeans, then we have in this fact data for an approximate determination of the age of at least a portion of these remains. The weight of testimony seems to sustain the view that syphilis was of American origin, and that it was originally imported from the West Indies into Europe. Whilst admitting that mankind had suffered with ulceration of the genital organs of a non-malignant character, and also, perhaps, with the simple contagious gonorrhœa for ages before the discovery of America, we desire simply to review, in connection with this discovery of the proofs of syphilis in the stone graves of Tennessee, the testimony of certain writers who had opportunities of investigating the origin of syphilis, at a comparatively early day in its history, in the West Indies and on the continent of America.

Bryan Edwards, in his "History of the West Indies," after describing the excessive sensuality of the aboriginal inhabitants of those islands, and alluding to this as the cause imputed by some writers for the origin of syphilis, "with the infliction of which they have almost revenged the calamities brought upon them by the avarice of Europe," nevertheless expresses his belief that the venereal affection was known in Europe many centuries before the discovery of America. He is compelled, however, to admit that "it might have broke out with renewed violence about the time of Columbus's return from his first expedition;" and he explains this sudden increase of the disease by a reference to the increased activity and commerce of the age, thus: "This was the era of wonder, and, probably, the infre-

[1] Medical Inquiries and Observations, Phila. 1805, vol. i, p. 25.

quency of the contagion before that period gave color to a report, perhaps at first maliciously propagated by some who envied the success of Columbus, that this disease was one of the fruits of his celebrated enterprise."

Edwards[1] enters no further into the discussion than to refer to the dissertations of William Beckett (Phil. Trans., vol. xxvii, p. 365; vol. xxxi, p. 47), and to that of Antonio Riberio Sanchez, published at Paris, 1772 and 1774; to the authorities referred to by Mr. Foster in his "Observations made during a Voyage round the World," p. 492; and to the following quotation: "In 'Stow's Survey of London' (vol. ii, p. 7) is preserved a copy of the rules or regulations established by Parliament in the eighth year of Henry the Second for the government of licensed stews in Southwark, among which I find the following: 'No stewholder to keep any woman that hath the perilous infirmity of burning.'" This was 330 years before the voyage of Columbus. After a careful examination of the original papers of Mr. William Beckett,[2] published in the Philosophical Transactions, I have failed to discover any clear evidence of the existence of syphilis before the discovery of America by Columbus.

Clavigero concludes his "History of Mexico"[3] with a dissertation on the *origin* of the *French Evil*, in which he in like manner quotes the dissertations of William Beckett and of Sanchez, and endeavors to refute the almost universal opinion that the *French Evil* had its origin in America. Neither Edwards nor Clavigero adduces one single fact or original observation to sustain this position.

On the other hand, Oviedo, one of the earliest writers who makes mention of this disease, and who also enjoyed opportunities of direct observation, says: "The venereal disease was certainly introduced into Europe from these islands" (the West Indies), "where the best medicine for the cure of it, the *guaiacum*, is also found. * * * * I was acquainted with many persons who accompanied Columbus in his first and second voyages, and suffered of this disease; one of whom was Pedro Margaritte, a man much respected of the king and queen. In the year 1496 it began to spread in Europe, and the physicians were wholly at a loss in what manner to treat it. When, after this, Gonzales Fernandez de Cordova was sent with an army by his Catholic Majesty on behalf of Ferdinand the Second, King of Naples, some infected persons accompanied that army, and, by intercourse with the women, spread the disease among the Italians and French, both which nations had successively the honor of giving it a name; but in truth it came originally from Hispaniola, where it was very common, as was likewise the remedy."

Sir Hans Sloane, M.D., in his great work on the "Natural History of Diseases, etc., of Jamaica and other West India Islands," says, "Columbus likewise brought into Europe in his ship, and first voyage from these places, the pox, which spread so quickly all over Europe that *Antonius Benivenius*, who was at that time a great and famous practitioner of physic at Florence, in the first chapter of

---

[1] Vol. i, pp. 64–66.
[2] Phil. Trans. 1718, vol. xxx, p. 839; 1720, vol. xxxi, p. 47; 1720, vol. xxxi, p. 108.
[3] Vol. iii, pp. 415–435.

his book '*de Abditis nonnullis ac mirandis morborum, et sanationum causis*,' tells us that the *lues venerea*, then beginning in Spain, had spread itself through Italy and France, and that in the year 1496 it had possessed many people in all the provinces of Europe. Dodonæus likewise tells us that this disease very much raged in the war that Charles VIII, King of France, had with Alphonsus, King of Naples, in the year 1494; and yet thinks that Gulielmus de Saliceto, who lived in 1270, Valeseus de Tarenta, who lived in 1418, and Bernardus de Gordonio, who died in 1305, give us an account of some symptoms of it. I am of opinion, notwithstanding what these have said, and some other less material passages in ancient works, and what Joannes ab Arderne wrote about an. 1360, and likewise what Stow says about the laws of the public stews in Southwark, that this was a distemper altogether new in Europe, Africa, and Asia, before it was brought from the West India Islands. The diseases mentioned by the above-cited authors being different from that distemper, both in symptoms and cure, only, perhaps, communicated somewhat after the same manner. I have seen some such cases attended with considerable inconveniences and fevers, and yet not at all pocky." London, 1707.—*Introduction.*

Sir Hans Sloane was physician to the Duke of Albemarle, and in 1687 visited Jamaica, where he remained eighteen years; his testimony, therefore, is entitled to the highest consideration.

The historian William Robertson, who appears to have examined the question of the origin of this disease with his usual care and learning, held that it originated in the West Indies. Thus, in his "History of America," he says: "One dreadful malady, the severest scourge with which in this life offended Heaven chastens the indulgence of criminal desire, seems to have been peculiar to the Americans. By communicating it to their conquerors they have not only amply avenged their wrongs, but by adding this calamity to those which formerly embittered human life, they have, perhaps, more than counterbalanced all the benefits which Europe has derived from the discovery of the New World. This distemper, from the country in which it first raged, or from the people by whom it was supposed to have been spread over Europe, has been sometimes called the Neapolitan and sometimes the French disease. At its first appearance the infection was so malignant, its symptoms so violent, its operation so rapid and fatal, as to baffle all the efforts of medical skill. Astonishment and terror accompanied this unknown affliction in its progress, and men began to dread the extinction of the human race by such a cruel visitation. Experience and the ingenuity of physicians gradually discovered remedies of such virtue as to cure or mitigate the evil. During the course of two centuries and a half its virulence seems to have abated considerably. At length, in the same manner as the leprosy, which raged in Europe for some centuries, it may waste its force and disappear; and in some happier age this western infliction, like that from the east, may be known only by description." Vol. ii, p. 85. In note xxiii to the same volume Robertson adds: "The rapid communication of the disease from Spain over Europe seems, however, to resemble the progress of an epidemic rather than a disease transmitted by infection. The first mention of it is in 1493, and before the year 1497 it had made its appearance

in most countries in Europe with such alarming symptoms as to render it necessary for the civil magistrate to interfere in order to check its course." Vol. ii, p. 379.

We have not considered it necessary to discuss the relations of syphilis with the elephantiasis of the Greeks or the leprosy of the Arabians, on the one hand, or with the *yaws* of Africa on the other, as they are clearly distinct diseases in their origin, history, symptoms, and mode of propagation; neither have we thought it necessary to examine critically in this place the various ulcers of the organs of generation described by Hippocrates, Pliny, and the older writers, since it is now clearly established that there are two well-marked varieties of venereal ulcers, one of which, known from time immemorial, is local in its character and without constitutional symptoms and effects; nor have we deemed it important to corroborate the preceding testimony by the arguments of such learned writers as Fracastorius,[1] Astruc,[2] Harvey,[3] and others; but have viewed the question of the origin of syphilis as resting mainly on the testimony of such authors as Oviedo and Sloan, who enjoyed opportunities of personal observation and research in the West Indies, where the disease is said to have been first contracted by Europeans. The question as to whether the natives of the North and South American Continent were afflicted with syphilis at the time of their discovery and exploration by the Europeans is involved in doubt and obscurity. The existence of the disease in the crowded West India Islands did not necessitate its existence on the continent.

After a careful examination of the accounts of the explorations and conquests of the early Spanish adventurers, we have failed to gather any testimony to substantiate the view that the disease existed also upon the continent.

All the earlier voyagers and explorers unite in describing the natives of America as remarkable for the perfection of their persons and limbs, and their absolute freedom from all deformities, ulcers, and blemishes.

The division of the North American Indians into numerous tribes and nations hostile to each other, the necessity of constant activity and change of location imposed by their mode of life, by the chase, and by the incessant wars in which they were engaged, and the comparative sparseness of the population, were evidently unfavorable to the spread of syphilis.

John Lawson[4] appears to have been the first author who asserted that this disease was peculiar or indigenous to the North American Indians. His observations were made about two hundred and eighty years after the discovery of the West Indies by Columbus, and the repeated contraction of syphilis by Europeans. During this time the most extensive intercourse had been carried on between Europe and America, and ample time had elapsed for the communication of this disease to the North American Indians, and also for the growth of the belief amongst these people who were without any written records, that the disease was peculiar to their race.

---

[1] Hieronymi Fracastorii Veron Liber Unus de Sympathia et Antipathia rerū item de Contagione, etc., 1554.

[2] A Treatise on Venereal Diseases, in nine Books, etc., by John Astruc. London, 1754.

[3] Venus Unmasked; or, A more exact Discovery of the Venereal Evil or French Disease, etc., by Gideon Harvey, 1665.

[4] A New Voyage to Carolina, etc. London, 1709, pp. 18–19.

The Indian doctors of physic also appear to have favored this idea with a view to magnify their skill and to excite confidence in their knowledge of the indigenous remedies of North America. Lawson's account of the "*epidemical*" character of the disease, and of its origin from drinking rum, and from exposure to cold and wet, and from eating such gross food as pork, is fanciful, and invalidates his testimony with reference to its existence among the Carolina Indians before their contact with Europeans. In fact, Lawson asserts at the same time that the Indians often get this disease from the English traders; and notwithstanding that he has given a long account of the skill of the "Indian doctor who had the misfortune to lose his nose by the pock," and alludes to a companion of the doctor who was in the same unfortunate condition, affirms in another portion of his work that he had never seen "an Indian have an ulcer or foul wound; neither is there any such thing to be found amongst them." There is no question as to the accuracy of his assertion that "the pock is frequent in some of their nations," for he gives unmistakable examples of the disease and recounts the method of cure employed by the Indians. Neither can it be denied that the disease was frequently communicated to the Indians by the English traders; but the testimony of Lawson as to the antiquity of the disease amongst the North American Indians, as well as to its mode of production and epidemical character, is valueless.

John D. Hunter,[1] who was a captive amongst the Western Indians for nineteen years, from 1796 to 1816, and who, during his hunting excursions, and in the wars in which he was engaged with numerous tribes, enjoyed ample opportunities for extended observation of the habits and diseases of these people, affirms that "syphilis, as the Indians say, was entirely unknown among them until they contracted it from the whites. It prevails among several of the tribes with which I am acquainted, and proves one of their most troublesome and fatal disorders. Those who go among the populous white settlements on the Missouri and Mississippi, where the disease prevails in its most inveterate forms among the traders and the boatmen who navigate the river to New Orleans, frequently return to their families and tribes infected with it. It often assumes a most distressing train of symptoms before the emaciated sufferer is aware of his situation."

We are not justified, therefore, in holding that the marks of syphilis in the organic remains of the stone grave race and mound builders of Tennessee indicate that this once populous nation which dwelt in towns defended by earth-works held intercourse with Europeans after the discovery of America by Columbus.

We have historical evidence to show that the most recent of these stone graves cannot be less than two hundred years old. How much older the organic remains in these stone coffins or cists may be we know not, as no records exist.

Chemical examination shows that the bones from the same aboriginal burying-ground present marks of having been deposited at different periods. Without entering into tedious details I will simply state the general results of my examinations, viz.: the proportion of organic matter varies within wide limits in the bones

---

[1] Memoirs of a Captivity among the Indians of North America from Childhood to the Age of Nineteen, etc., by John D. Hunter. London, 1823, p. 142.

of different stone graves, and in accordance apparently with the age of the bones. In those bones which crumble readily, the amount is small, although, as far as my examinations extended, it was always sufficient to give a black carbonaceous appearance to the bones during the earlier stages of incineration in crucibles. When acted on by dilute hydrochloric acid, many of the oldest bones dissolved, leaving a mere trace of organic matter or gelatine, whilst the more recent bones thus treated yielded a firm elastic organic matrix of gelatine, possessing the form of the bones. The diseased bones which I collected from the stone graves of Tennessee are probably the most ancient *syphilitic bones* in the world; and this discovery appears to be of great importance in the history of specific contagious diseases, in that it confirms the view held by some pathologists that syphilis originated in the Western Hemisphere.

The fact that the existence of syphilis was not noted by the early explorers amongst the nomadic tribes of North America cannot be adduced to prove that the aboriginal stone grave race of Tennessee and Kentucky contracted the disease by intercourse with Europeans. This is evident from the following considerations established by my explorations:—

a. The stone grave race of Tennessee and Kentucky were more advanced than the nomadic and hunter tribes of North America in certain arts. Thus they lived in compact, fortified towns and villages; they fashioned superior stone implements; they understood the art of sculpture, not only ornamenting their well-constructed vases with the heads of animals and man, but also carving images from blocks of stone, and fashioning them from a mixture of clay and crushed shells.

b. The features of the images or idols fashioned by the stone grave race of Tennessee and Kentucky were entirely different from those of the nomadic tribes. The head-dress and ornaments also were different, and in many cases resembled those employed by the Chinese and Mexicans in their idols.

c. Whilst the crania of the stone grave and mound-building race of Tennessee and Kentucky possess in a marked degree those characteristics which distinguish the American race from all others; at the same time they appear to belong to the Toltecan division of the American nations, being characterized in common with those of the Inca Peruvians and the Toltecs of Mexico by the quadrangular form, compressed and almost vertical occiput, lateral swelling out of the sides, and elevated but retreating forehead. As in the case of the crania of the Inca Peruvians these skulls are remarkable for their irregularity of form, for, among the whole number examined, scarcely one could be called symmetrical; and in many of the crania the Os Incæ, characteristic of the Peruvian skulls, was observed.

The fact that syphilis had committed ravages amongst this race was deemed of such importance as to arrest our attention in the midst of the explorations, and unavoidably led to a consideration of the time and place of the origin of this loathsome and singular disease, which transmits its effects from generation to generation, and leaves a record which outlives death, and is as imperishable as the bony skeleton itself.

A small grave lying on the east of the first grave described, in the burial mound now under consideration, contained only some decayed bones of a child.

From a short square grave lying south of the principal graves, we obtained a very fine skull with perfect teeth. Some of the long bones of the skeleton were wanting, and it appeared from this circumstance, as well as from the manner in which the bones were deposited, that the skeleton had been preserved for some time, and perhaps had been transported from a distance before its final interment in the stone box. The long bones were placed around the cranium, and one of the phalanges of the foot was sticking in the nasal opening. It will be seen from the following measurements that in this skull the compression of the occiput was comparatively slight, and that the facial angle was above the medium of this race. Facial angle, 80°; internal capacity, 80 cubic inches; longitudinal diameter, 6.6 inches; parietal diameter, 5.6 inches; frontal diameter, 4.3 inches; vertical diameter, 5.5 inches; intermastoid arch, 15 inches; intermastoid line, 4.6 inches; occipito-frontal arch, 13.8 inches; horizontal periphery, 19.3 inches; diameter of face and head, 7.2 inches; zygomatic diameter, 5.2 inches.

Several other stone graves were discovered by sounding the inclosure in various directions with an iron rod, but beyond some fragments of pottery no implement or relic of interest was discovered.

In a stone grave near the summit of a small mound at the western angle of the large pyramidal mound, I obtained a fine cranium in perfect preservation, free from any blemish or decay, with full sets of white and sound teeth, sixteen above and sixteen below. A Wormian bone, half an inch in diameter, is situated at the junction of the occipital and parietal bones. This skull, like the preceding one, presents but slight marks of pressure upon the occiput, and the outlines, as determined by the craniograph, as well as the occipito-frontal and vertical arches, are very nearly symmetrical, as will be evident from the following measurements: facial angle, 77°; internal capacity, 80 cubic inches; longitudinal diameter, 6.8 inches; parietal diameter, 5.2 inches; frontal diameter, 4.1 inches; vertical diameter, 5.8 inches; intermastoid arch, 15 inches; intermastoid line, 4.7 inches; occipito-frontal arch, 14.4 inches; horizontal periphery, 19.5 inches; diameter of head and face, 7.8 inches; zygomatic diameter, 5.2 inches.

Numerous stone graves were found on the sides of the adjoining hills outside the line of fortifications, but they yielded no relics of importance.

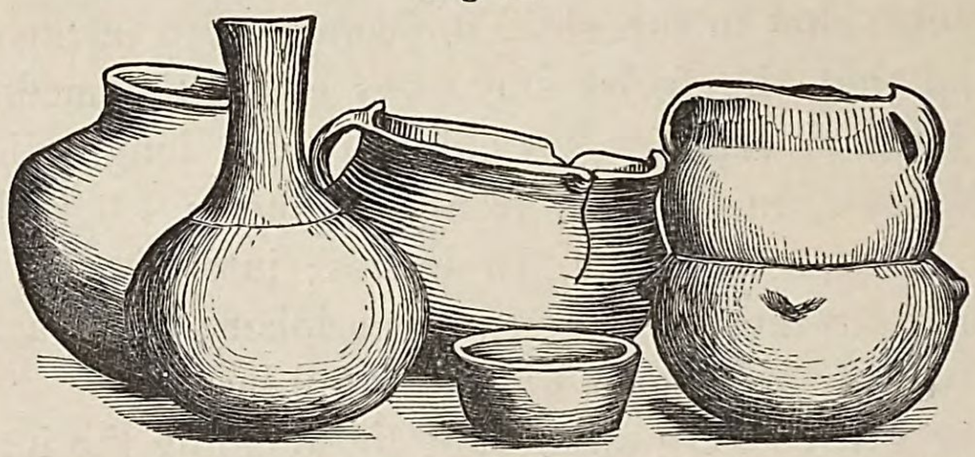
These facts strengthened the opinion that the two principal burial mounds within the area inclosed by the line of the works were the burial places of royal families. It is also worthy of note that the number of graves within and around the mounds and earthworks was not sufficiently great to lead to the supposition that a very large population resided immediately within these fortifications. It is probable that large numbers were assembled within them only when the inhabitants were pressed by their enemies.

In order to display still further the taste and skill of this race in the manufacture of earthenware vessels, I have grouped together in Figs. 34 and 35 some of the specimens referred to in the preceding pages.

A large number of interesting relics have been found from time to time during the cultivation of the area of this aboriginal settlement, and in the surrounding fields.

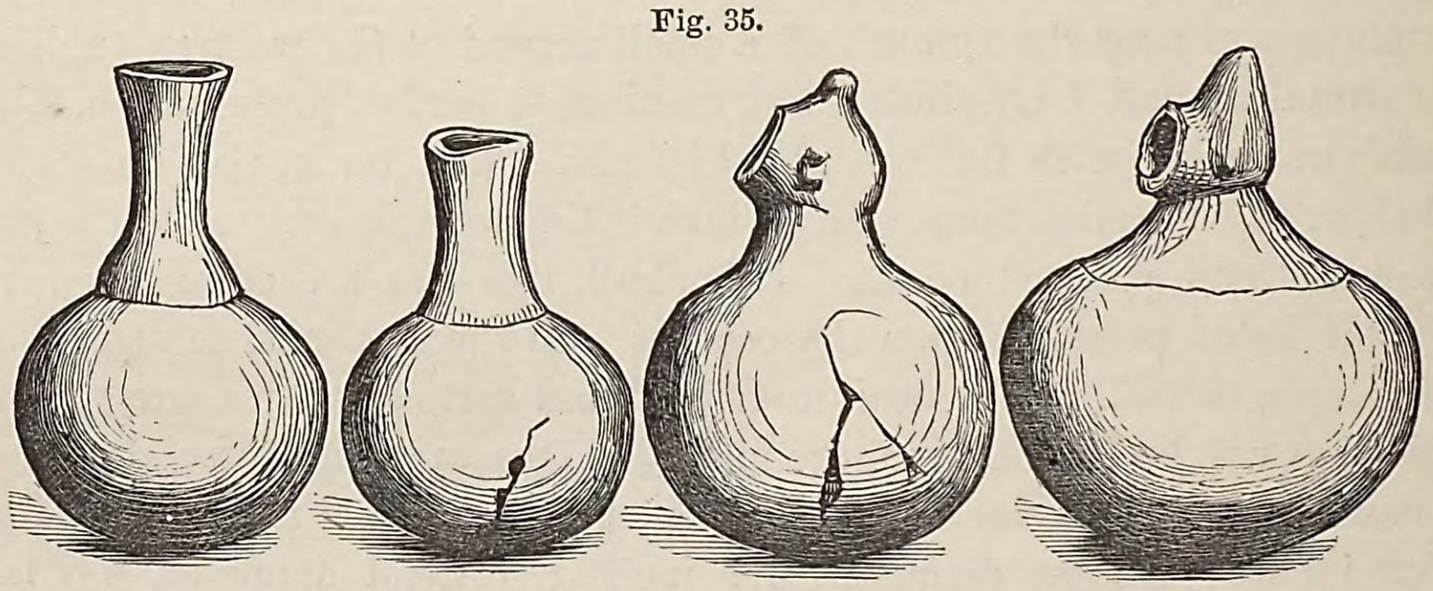
Among the most interesting of these relics is a beautiful stone disc or paint mortar, formed of hard yellow silex, hollowed on both sides, highly polished, and so thin in the central portion as to be translucent. It is 6 inches in diameter, and 2.3 inches thick along the border or outer rim. The excavations on either side are 5 inches in diameter and 1.1 inches deep. The thickness of the septum dividing the two excavations is only one-tenth of an inch.

Fig. 34.



Group of vases and pots, composed of crushed shells and clay, from stone graves within the ancient works on the Harpeth River, two and a half miles above Franklin, Tennessee. About one-fourth the natural size.

Fig. 35.



Group of vases, same material and locality as Fig. 34.

A discoidal stone formed of a conglomerate of variously colored siliceous pebbles, four inches in diameter and two inches in thickness, taken from a stone grave within the line of the earthworks, is represented in Fig. 36.

Fig. 36.

Fig. 37.

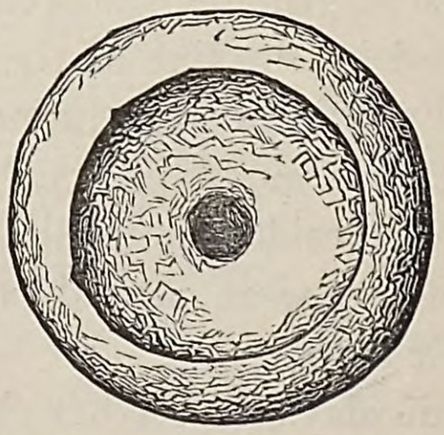


Fig. 36. Discoidal stone from the ancient works on Big Harpeth River, two and a half miles above Franklin, Tennessee. One-fourth natural size.

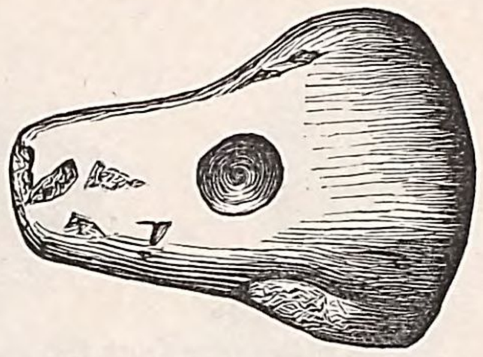
Fig. 37. Biconcave discoidal stone, about one-fourth natural size, from the ancient works on Big Harpeth River, two and a half miles above Franklin, Tennessee.

One of the biconcave discoidal stones of hard silex, perforated by a small hole in the centre, is represented in Fig. 37.

Another small specimen of the disc kind, and from the same locality, 2 inches in diameter and $\frac{1}{10}$ inch thick in the outer border, is formed of hard green serpentine, to which a very high polish had been imparted.

The stone hatchet shown in Fig. 38, and which was obtained from a stone grave within the line of earthworks, is formed of beautiful green chloritic slate, highly polished, and is perforated by a hole, the sides of which are quite smooth. The hole appeared to have been used for the insertion of a rivet through the handle of this stone hatchet or battle-axe.

Fig. 38.



Hatchet of hard green chloritic slate from a stone grave within the ancient works on Big Harpeth, two and a half miles above Franklin, Tennessee. One-fourth natural size.

Numerous stone chisels and wedges of various sizes, from 1.5 inches in length to 10 inches, highly polished, and composed of hard green chlorite, variegated serpentine, limestone, and silex, two of which are represented in Figs. 39 and 40, have from time to time been found within and around these ancient works.

The grave from which these stone implements were taken contained numerous similar objects. These small stone implements must have been used for mechanical purposes, as they appear to be too small to have been used in warfare.

Fig. 39.

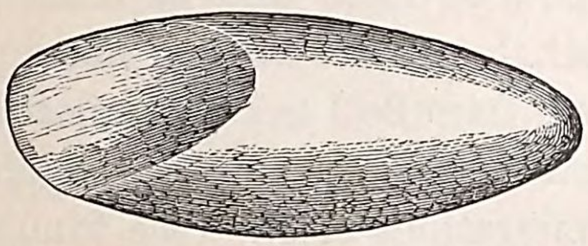


Fig. 40.

Fig. 39. Polished wedge or fleshing instrument of green chlorite from a stone grave within the ancient works on Big Harpeth, two and a half miles above Franklin, Tennessee. One-fourth natural size.

Fig. 40. Small chisel of green chloritic stone, sharpened at both ends, from a stone grave within the ancient works on Big Harpeth River, two and a half miles above Franklin, Tennessee. One-half natural size.

Several pipes have been found in this locality. I succeeded, however, in obtaining only a small one fashioned of sandstone, and represented in Fig. 41. The exterior of the pipe is rudely carved with lines as in the figure.

Fig. 41.

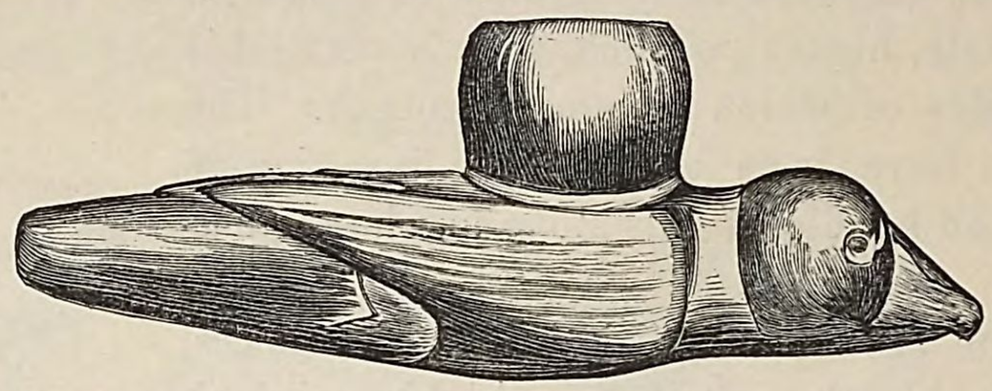
Sandstone pipe from a stone grave in an aboriginal earthwork on Big Harpeth River, two and a half miles above Franklin, Tennessee. Length two and a half inches.

The largest pipes found in this locality resemble the one formed of a chocolate-colored stone in the shape of a parrot, which I obtained near Murfreesboro', Tennessee, and which is represented one-fourth the natural size in Fig. 42.

Several of the pipes found in the valleys of the Cumberland, Harpeth, and Duck Rivers, in Tennessee, which I have examined, were formed of a hard green stone, to which a high polish had been imparted. Some of these pipes were of considerable size, being 18 inches in length. The form of a bird having the general appearance of the one given above, or of the eagle or the quail, seems to have been most generally employed by the

abcrigines of that State. I have seen a large stone pipe, about 14 inches in length, which had the form of the male organ of generation; and another smaller one in the shape of a four-footed animal.

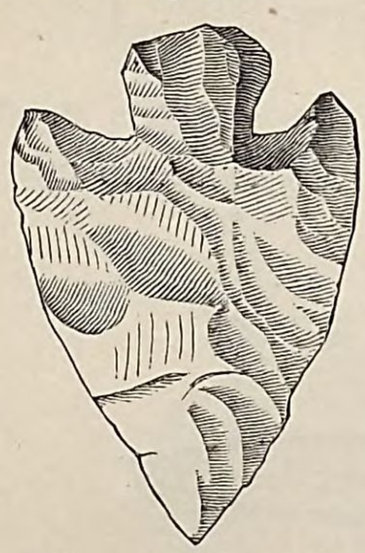
Fig. 42.



Stone pipe from the aboriginal works near Murfreesboro', Tennessee. One-quarter natural size.

Numerous spear and arrow-heads have also been found within and around this ancient earthwork, one of the most perfect of which, formed of beautiful variegated white, yellow, and red jasper, is represented in Fig. 43.

Fig. 43.



Spear-head, one-half natural size, from the ancient works on Big Harpeth, two and a half miles above Franklin, Tennessee.

It is evident, from the following observations, that the stone implements from the ancient earthwork on the banks of the Big Harpeth River were formed of various kinds of stone which are unknown in this section of North America. I found also some fragments of mica and obsidian in this locality. It is probable that the places whence some of these materials were obtained were from 300 to 2000 miles distant; and the conclusion is reached that either these implements were obtained during the migrations of the race from distant regions, during long hunting and war expeditions, or by barter from surrounding nations.

The careful exploration of the mounds and stone graves within the line of these aboriginal works on the Big Harpeth River, has yielded important information concerning the mode of burial, the character of the crania, the works of art, and the warfare of the race which constructed the earthworks and erected the mounds; and has also resulted in the discovery of copper crosses, of vases with various symbolic paintings (amongst which has been noted the cross), and of bones extensively diseased, and bearing unmistakable marks of syphilitic inflammation.

A small image in my possession, formed of white clay, found in middle Tennessee, painted with the same black pigment as their vases, and dressed in what appears by the markings to be a woven garment, has a cross painted on both shoulders.

The front and profile views of this small hollow image are represented in Figures 44 and 45; about one-sixth natural size.

The small black image (Fig. 9) has three prominences on the head ornament; the stone hatchet, with the stone handle from the same mound, has three marks on the end of the handle; the beautiful shell ornament, from the same locality, has

three crescentic lines, both on the anterior and posterior surfaces; and the painted vases, with the crosses and scalloped arches, from the burial mounds on the banks of the Big Harpeth, were accurately divided by bands of black pigment, each into three circles, inclosing the crosses and scalloped bands.

A circular shell ornament, with a distinct cross carved in the centre, which had been filled with red pigment, was taken by Colonel Putnam from the breast of a skeleton in a stone grave near Nashville, Tennessee.

Haywood, in his "Natural and Aboriginal History of Tennessee," records the fact that in the small graves near Sparta, Tennessee, vessels with the cross painted on them, and also a round shell with two holes, a cross, and two circles cut in it, were exhumed. Haywood also states that, in digging into a mound at Chillicothe, Ohio, the remains of a man were found, and over the place where his breast was supposed to have been, was a cross and a string of beads. The cross was completely converted into verdigris. The trees which grew upon the mound were of the same size as those of the surrounding woods.

Fig. 44. Fig. 45.

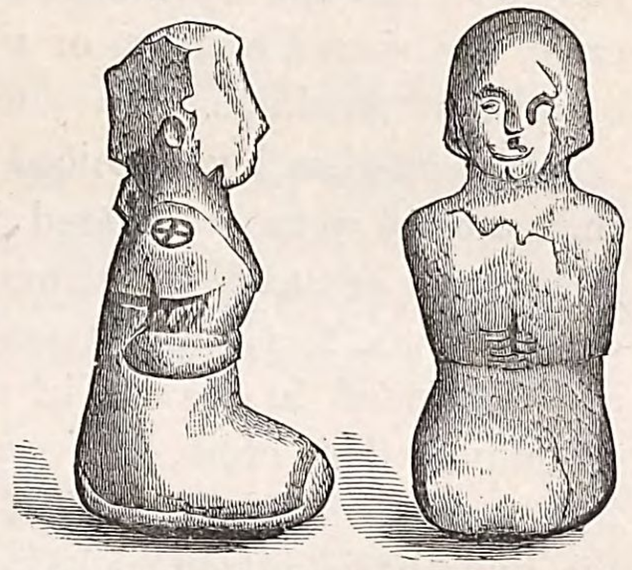


Fig. 44. Profile view of a small, hollow image, from an aboriginal mound in the valley of the Cumberland.

Fig. 45. Front view of the image represented in Fig. 44.

When the Spaniards arrived in America, they are said to have found stones cut in the figure of a cross which were reverenced by the Mexicans.

The principal object in a tablet described by Mr. Stevens, from the ruins of Palenque, is a cross surmounted by a strange bird, and covered with indescribable ornaments. The two figures on either side of the cross are evidently those of important personages, perhaps of sacerdotal character. Both are looking towards the cross, and one seems in the act of making an offering, perhaps of a child. This tablet of the cross has given rise to more learned speculations than perhaps any others found at Palenque. Dupaix and his commentators, assuming for the building a very remote antiquity, or at least a period long antecedent to the Christian era, account for the appearance of the cross by the argument that it was known and had a symbolic meaning among ancient nations long before it was established as the emblem of the Christian faith. In Egypt it was venerated from the greatest antiquity as the symbol of matter; amongst the Irish it was the symbol of knowledge; and Garcilasso affirms that the ancient Peruvians had a cross of white marble which they held in great veneration, but did not adore, and could give no reason for the respect which they paid it. Mr. Stephens, in the second volume of his travels in Central America, expresses the opinion that this particular building in which the cross was found, was intended as a temple, and the inclosed inner chamber containing the cross was an *adoratorio.* In the only statue found at Palanque, the face of which has an expression of serene repose and a strong resemblance to Egyptian statues, the form of the cross is plainly marked in the head-dress. Mr. Stephens denies any very great antiquity to these ruins, and holds that they are the work of a people who had not yet passed away—but who

occupied the country at the time of the invasion of the Spaniards. This author considers the celebrated *Cozumel cross* preserved at Meridia, which claims the credit of being the same originally worshipped by the natives of Cozumel, as, after all, nothing but a cross that was erected by the Spaniards in one of their own temples after the conquest.

It is, however, well established that the cross was found in Mexico before the conquest, and the Spaniards could not suppress their wonder as they beheld the cross, the sacred emblem of their own faith, raised as an object of worship in the temples of Anahuac. They met with it in various places.

Archæologists have noticed that the early writers laid great stress upon the fact that crosses were discovered in various parts of America at the time of the conquest, and deduced therefrom some very extraordinary conclusions. Don Carlos de Siguenza Y. Gougora speaks of one drawn from the cave of Mizteca Baxa, and venerated in his day in the Conventual Church of Tonala, dedicated to St. Dominic. This cross, he avers, was discovered by the music of angels being heard in the cave, on a long vigil of the glorious apostle St. Thomas, who, according to his hypothesis, introduced Christianity into America immediately after the era of Christ.

Gomara mentions crosses in Yucatan; and Bonturini testifies to having frequently met with them in paintings. Mr. Squier has shown, however, that his error consists in mistaking the symbolical *Tonacaquahuitl*, or *Tree of Life*, for a cross. Mr. Squier, in his work on Nicaragua, notices the occurrence of the cross in some of the aboriginal remains. A number described at Zapatero are distinguished by this feature.

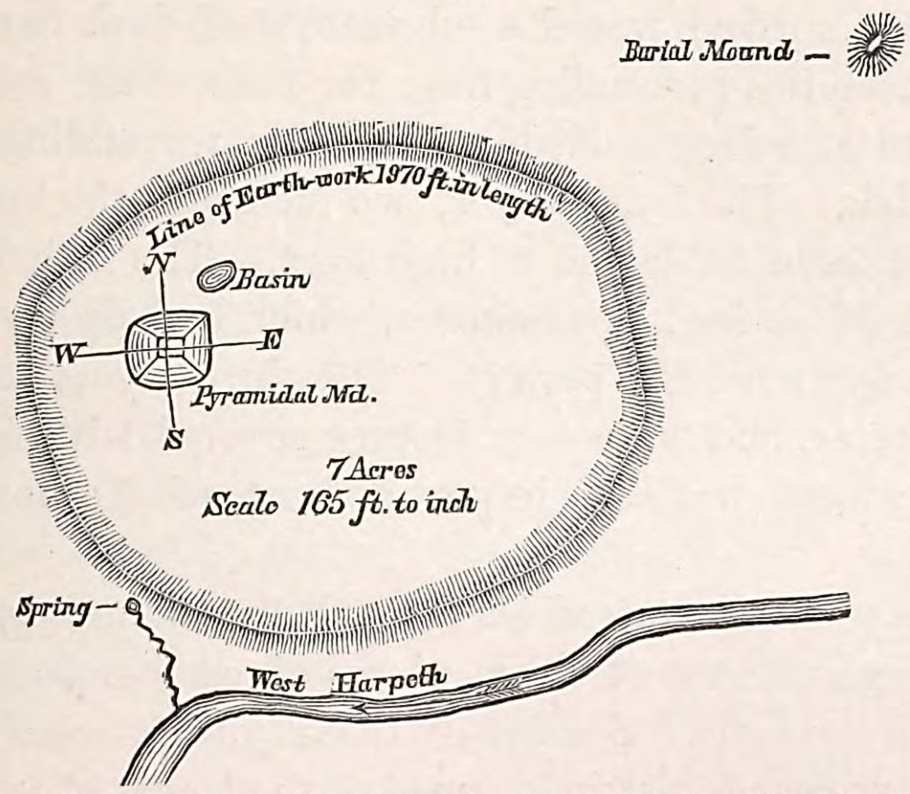
These facts may be viewed by some as indicating that the inhabitants of America have, at various times, come in contact with the civilizations and religions of Asia and Europe, even before the recognized period of the discovery and exploration of the American continent; and, when considered in connection with the results of my explorations of the aboriginal remains of Tennessee, it is clearly established that, in the absence of historical records, it is difficult and perhaps impossible to form a correct judgment of even the approximate age of the aboriginal mounds and stone graves of Tennessee, merely from the discovery of copper crosses and certain symbolical paintings on earthen vessels. The more important inference appears to be that the mound-builders and stone-grave race of the Mississippi valley had a common origin or near affinity with the aboriginal inhabitants of Mexico and Central America.

CHAPTER V.

EARTHWORKS ON WEST HARPETH AND BIG HARPETH RIVERS.

A CIRCULAR embankment lies on the northeastern bank of West Harpeth River, five miles southwest of Franklin, Tennessee, on the land of Mr. J. R. Hughes. This ancient earthwork, together with the mound which it incloses, and the burial mound situated without the line of fortifications, is represented in Fig. 46.

Fig. 46.



Plan of works and mounds lying on West Harpeth River.

The line of fortification is 1970 feet in length, and incloses seven acres. Both the rampart and the works within the inclosure are covered with large forest trees.

The pyramidal mound standing in the northwestern corner of the inclosure has a diameter at the base of 110 feet, and at the summit of 35 feet, and a mean height of 9 feet. A fine spring breaks out near the southwestern line of fortifications, and runs through a small ravine into the West Harpeth River.

Near the northeastern angle of the mound is a regularly formed depression or basin, 32 feet in diameter.

The growth within the inclosure consists chiefly of birch, maple, elm, hickory, and oak; a number of these trees are not more than from 6 to 14 inches in diameter, and are apparently from 40 to 50 years of age; but there are still standing a number of old oaks. The stump of one of these 7.5 feet in diameter, standing near the foot of the mound, exhibited *three hundred* rings, and from appearances, the tree had been cut down some twenty years before my exploration.

The larger oak which overhangs the spring is 10 feet in diameter at the base.

The works are situated on a slight elevation in a low bottom, which is subject to overflow in rainy seasons.

The embankment is in a good state of preservation, being, in some places, eight feet in height. The ditch is on the inside of the line, and at certain intervals the embankment is much thicker, or wider, as if some tower or defensive structure had been erected at each of these points. Within the inclosure are eight depressions, or excavations, which are thought to have been made during the erection of the mound. Openings or pass-ways exist in those portions of the works which are nearest to the spring and the river.

I caused the mound to be cut in two by a broad deep ditch, commencing on a level with the surface of the earth, and running directly through from north to south. Sections were also carried east and west from the middle ditch.

The mound was found to be composed of seven different layers of soil or earth. The bottom, slightly elevated above the surrounding surface, consisted of a layer of hard baked clay.

Upon this *altar-like* surface rested a substratum of dark earth four feet thick. The third layer, in the series proceeding from the base of the mound upwards, was eight inches thick, and of a deep reddish-yellow color, resembling both in shade and hardness a burned brick. The fourth layer, two inches in thickness, was black and very hard, as if it had been subjected to high heat. The fifth was a light-colored layer, only one-fourth of an inch in thickness, which had been subjected to such a degree of heat that it was hard like pottery. The three layers last mentioned were about 28 feet in diameter, and were each in turn covered with a layer of charcoal. The fuel appeared to have consisted, in part at least, of the common cane of the surrounding low-lands.

Fragments of pottery were scattered all through the mound, but near the middle of the fifth layer a large number of thick pieces of earthenware were found, composed of clay and river shells. Several of these pieces were surrounded with charred wicker-work, or coarse matting formed of the leaves of the cane. Although thoroughly charred, these fragments retained their reticulated form. It would appear that the large vessel had been moulded in this peculiar kind of matting. The sixth layer was composed of the ordinary soil; and on this rested a layer of mould, constituting the seventh or outer layer. A layer of ashes encircled the mound about two feet beneath the surface, and appears to have accumulated gradually during the use of the mound as an altar.

A small burial and sacrificial mound lies about four hundred yards southeast of the inclosure, on an elevation about sixty feet above the level of the water in West Harpeth. A ravine, in which is a small stream, lies between the inclosure and this small mound. This structure has the appearance of a natural rising or gentle elevation, and it would scarcely be recognized on a superficial view as of artificial origin, were it not for the existence of several depressions in its immediate neighborhood, which appear to have furnished the earth for its construction. It seems to have been much washed and worn by the rains; at present the diameter of its base is 60 feet, and its height 5 feet.

A circular opening ten feet in diameter was made in the summit. A short dis-

tance beneath the surface a layer of flat limestone rocks was reached. They appear to have been gathered from the bed of the stream below and from the sides of the ravine. These slabs were irregularly laid. After the removal of the first layer of rocks, they were found to have rested on a stratum of earth five or six inches thick, beneath which a regularly laid pavement of smooth flat rocks was exposed; and beneath this was found still another layer of very thin smooth slabs. The three layers of rocks and earth formed two and a half feet of the upper crust of the mound. In the centre of the mound, beneath the lowest layer of rocks, a stratum of earth of a deep red color, mixed with fragments of charcoal and partially charred cane stems, was reached, which was eight inches in thickness, six and a half feet in diameter, and of a circular form. This earth had the appearance of having been subjected to a high heat, and the material chiefly used in the kindling of the fires seemed to have been the ordinary cane of the low-lands which covered large tracts of this country when first explored by the whites. After the hard layer of burned red-clay was dug through, a layer of earth which appeared to have been superimposed on the natural surface of the hill was reached, whose depth was two feet. The shaft was continued three feet down into the natural or original soil of the hill without discovering any traces of fire or of the works of man.

In extending the excavations towards the circumference of the mound, stone graves were discovered arranged like the radii of a circle around the central *altar* of hard baked clay. The graves were separated by intervals of three or four feet, and the inclosed skeletons were disposed with their feet towards the *altar*, and their faces directed forwards, looking as it were upon the *altar*, whereon it is supposed the aborigines formerly maintained the Sacred Fire. Most of the bones were very much decayed, and they appear to have been crushed by the heavy mass of rocks which formed the upper cap or crust of the mound. In several graves the bones were reduced to a yellow substance which crumbled on the slightest touch. Even the teeth appeared to have been buried so long that the enamel parted and crumbled when pressed between the fingers. It was possible to examine only a single skull *in situ* by carefully cutting the earth away. The occiput was much flattened, and in general appearance and form this skull resembled those of the Natchez Indians, and many similar crania which I exhumed from the stone graves of Tennessee. The bones of this cranium were, however, so much decayed that they crumbled on the slightest touch, and it was impossible to lift the skull out of the grave.

Pieces of earthenware composed of clay and crushed shells were found lying between the graves; it was, however, impossible to reproduce any vessel from these fragments.

This mound resembled in its general structure the sacred burial mound on the banks of the Cumberland River, opposite Nashville, the main differences consisting in the greater age of the former, the presence of a hard layer of burned clay for an altar, and the absence of ornaments and stone implements.

We are inclined to attribute a considerable age to this burial mound and to the earth-works. The largest trees growing on the embankment and within the

inclosure would indicate that the work was completed more than 300 years ago; how much longer it had stood, it is of course impossible to conjecture, as no relics were found which could throw any light on this interesting question.

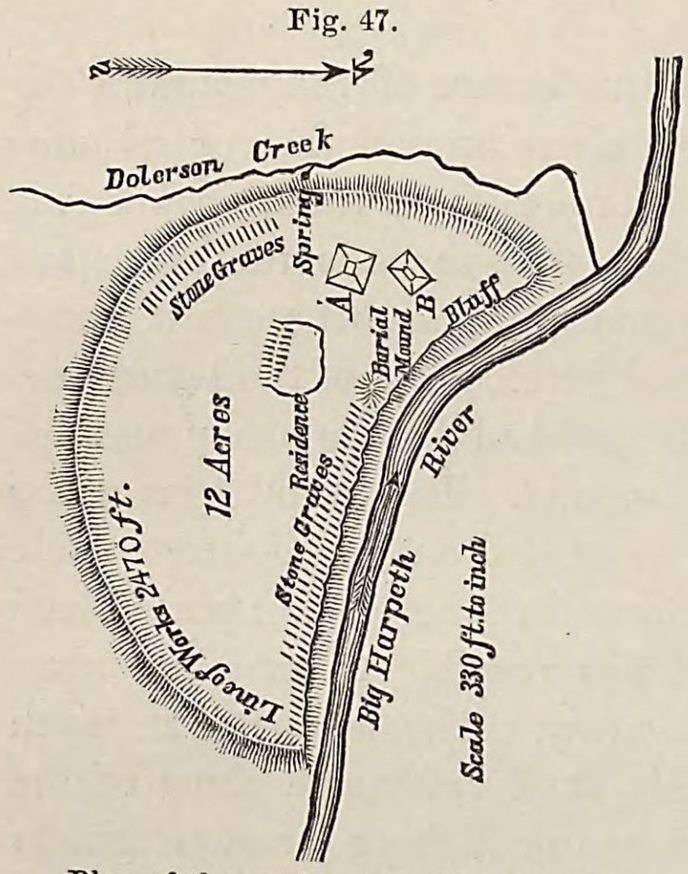
Earthworks at Old Town.

The remarkable aboriginal remains known as Old Town are situated on the banks of Big Harpeth River, six miles southwest of Franklin, Tennessee, and two miles and three-quarters from the ancient works and mounds just described, on the banks of West Harpeth, on the lands of Mr. Hughes.

At Old Town, on the land owned at present by Mr. Thomas Brown, the works extend in a crescent form from the steep bluffs on Big Harpeth, 2470 feet in length, and inclose twelve acres. They contain two pyramidal sacrificial mounds, a small circular burial mound, a large burial mound now occupied by the family mansion, and numerous stone graves, ranging principally along the banks of the river.

The stone graves are numerous not only within the line of works, but also on the slopes of the hills and in the low-lands for two miles around, and the general appearance of the surrounding lands gives evidence of the existence in former times of a large aboriginal population.

Fig. 47.



Plan of the works, mounds, and stone graves at Old Town.

The general plan of the aboriginal works at Old Town is given in Fig. 47.

At the present time the height of the inclosing earthworks varies from two to six feet; they have been much worn down by the ploughshare, however, and they are said to have been so steep and high thirty years ago that it was impossible to ride a horse over them.

The bluff on the river is abrupt, like that included in the fortifications at General de Graffenreid's on the same stream; and a fine spring of water, called the Bluff Spring, issues from the banks within the portion included by the line of works.

Two pyramidal mounds and a small burial mound are situated in the southwestern corner of the earthworks, near a fine spring, and within thirty feet of each other; the largest (A) is 112 feet in the long diameter, 65 feet in the short diameter, and 11 feet high; the next in size (B) is 70 by 60 feet at the base, and 9 feet high; and the small burial mound is 30 by 20 feet in diameter, and 2.5 feet in height. The house of Mr. Brown, located near these mounds and within the line of works, appears to have been built on a burial mound, for in excavating the foundation a number of interesting relics were found, and among them a vase the neck of which terminated in two human heads.

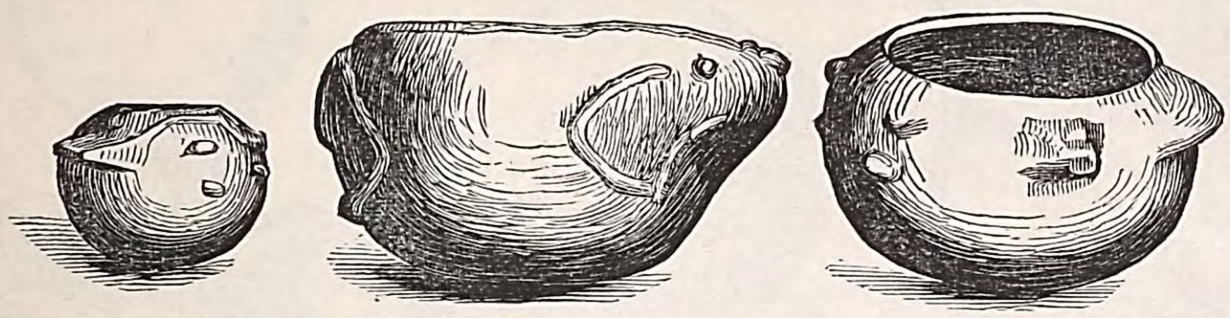
The burial mound is probably composed of stone graves ranged one upon another as in the burial mound previously described near Brentwood. We obtained

from a stone grave on the side of this mound next the river, near where the road crosses its border, a small black clay pot or vase made in the likeness of a frog.

This vase was 6.75 inches in the long diameter, and 3.5 inches in height. Several other graves on the flanks of this mound yielded vases; but unfortunately three-fourths of it lay within the flower garden of Mr. Brown, and the family would not consent to have it disturbed.

The vase in the shape of a frog is represented in Fig. 49.

Fig. 48. Fig. 49. Fig. 50.



Earthenware vessels composed of dark clay and crushed shells from stone graves at Old Town.

We are of the opinion that this small burial mound is very rich in vases and stone implements. From its position with reference to the large mounds, and from the contents of the graves opened, the opinion was formed that in conjunction with the mound upon which the house stands it constituted the burial place of the chief families of the tribe or aboriginal settlement. On the other hand, about fifty stone graves along the banks of the river, and on the sides of the hill beyond, were opened without discovering any pottery or implements. There appeared to have been great irregularity in the mode of burial; in some large graves nine and a half feet in length, as many as four whole skeletons were discovered, and in other graves from two to five feet in length, adult skeletons were found with the bones irregularly placed as if the bodies had been bent. In many graves the bones of the pelvis lay immediately under and in proximity with the bones of the skull. In the short graves, which proved to be the most numerous, the bones were in many instances very irregularly laid, those of the feet and hands being mingled together in proximity with the skulls; generally the long bones were laid transversely across the end of the grave, the arm and leg bones being together.

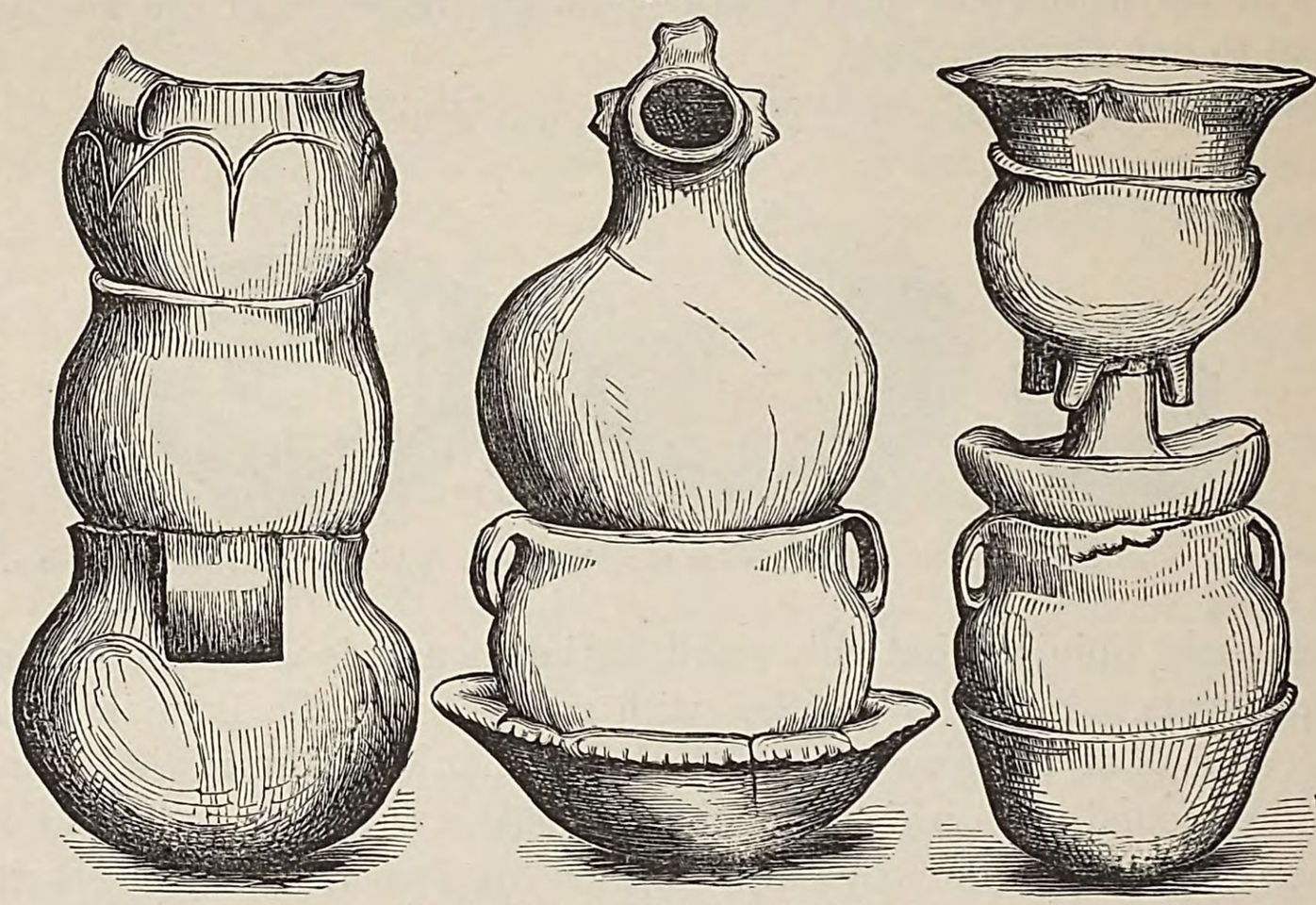
The earthenware pots and bowls were sometimes found at the foot, but most generally at the head of the grave, by the side of the skull; and in several instances one pot or bowl was placed in another, as in the case of the frog-shaped bowl, which rested upon the top of a large thick black vessel. The grave was only 3.5 feet in length, and contained the skull of a very old man; the long bones were laid across the grave.

The following figure 51 presents the forms of some of the earthenware vessels exhumed from the stone graves of Old Town.

The lowest of the three middle vases is ornamented with a beautiful sculptured border, and by four projections. This vessel was evidently used as a dish of some kind, and is not deeper than an ordinary soup plate. The second one from the top, on the right, has four feet, and resembles in all respects the iron pots of the present day.

The skill of the aboriginal inhabitants of Old Town was still further illustrated by a curious black earthenware vessel, resembling the head of a hog, and represented in Fig. 52.

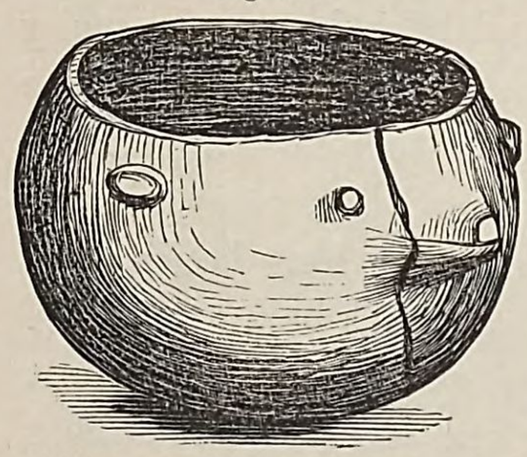
Fig. 51.



Earthenware vessels from Old Town.

The fact that this vase resembled the head of the Mexican hog or peccary, taken in connection with the large marine shells which have been exhumed from the aboriginal stone graves, establishes the connection of the Mound Builders of Tennessee with distant southern and southwestern nations.

Fig. 52.



Black vase or pot, composed of dark clay and crushed shells, from a stone grave at Old Town, banks of Harpeth River.

The diameter of this vase is 6 inches, its height 4 inches.

The crania obtained from the stone graves at Old Town presented similar characteristics to those described in connection with the explorations at other localities. Many of the crania presented little or no flattening of the occiput, as was well shown in the case of a cranium exhumed from a stone grave on the banks of Big Harpeth, which approached in its general outline to the Mongolian type. In this skull there is but a slight flattening of the occiput, and the foramen magnum is more symmetrical in its outlines, and in its relative position, than in many of the crania of this ancient race.

This cranium yielded the following measurements: facial angle, 82°; internal capacity, 81 cubic inches; longitudinal diameter, 6.9 inches; parietal diameter, 5.5 inches; frontal diameter, 4.3 inches; vertical diameter, 5.7 inches; intermastoid arch, 15 inches; intermastoid line, 4.8 inches; occipito-frontal arch, 14 inches; horizontal periphery, 19.6 inches; diameter of head and face, 7.8 inches; zygomatic diameter, 5 inches.

In another large cranium, which had an internal capacity of about 100 cubic inches, the marks of occipital pressure and flattening were but slight, as may be gathered from the following measurements: longitudinal diameter, 7.2 inches; parietal diameter, 5.7 inches; frontal diameter, 4.6 inches; vertical diameter, 5.9 inches; intermastoid arch, 16 inches; intermastoid line, 4.6 inches; occipito-frontal arch, 15.2 inches; horizontal periphery, 20.8 inches.

One of the crania taken out of the small square grave which contained another skeleton, and from which the black pot shaped like a frog was obtained, exhibited marks of artificial pressure or moulding, the occiput being flattened, the parietal diameter increased, and the lateral diameter diminished, as will be seen from the following measurements: longitudinal diameter, 6.1 inches; parietal diameter, 5.5 inches; frontal diameter, 4.1 inches; vertical diameter, 4.5 inches; intermastoid arch, 14 inches; occipito-frontal arch, 13.6 inches; horizontal periphery, 19 inches.

The bones in this grave had evidently been deposited after the flesh had been removed, and after the skeleton had been disjointed. This cranium had been fractured before being placed in this grave, for the interior was filled with fragments of bone, and a portion of a rib extended quite across the vault of the skull. The fragments of bone within the skull were imbedded in a tenacious black clay. The other cranium from this grave presented little or no flattening of the occiput.

The bones of another cranium, from a stone grave on the banks of the river, presented nodular swellings, and the long bones of the skeleton to which it belonged gave unmistakable evidences of the ravages of syphilis, in the numerous *nodes*, and in the almost complete obliteration of the medullary cavity in the tibia. This cranium was in a good state of preservation; the facial angle is 77°, and the internal capacity, 84 cubic inches.

The bones of another cranium, exhumed from a stone grave in a dry and sandy soil, were remarkably delicate, white, and bleached; and we concluded that it had belonged to a female, and that it was one of the most recently interred in this aboriginal graveyard. This cranium was said to have been taken from a stone grave in this inclosure by the late Dr. Freeman, and, with one exception, was the only specimen not removed from the stone graves immediately under my supervision, or by my own hands. Although it is slightly flattened, the occiput and general contour of the head were less altered than usual in this aboriginal race, as will be seen by the following measurements: facial angle, 76°; internal capacity, 68 cubic inches; longitudinal diameter, 6.4 inches; parietal diameter, 4.9 inches; frontal diameter, 3.9 inches; vertical diameter, 5.5 inches; intermastoid arch, 13.9 inches; intermastoid line, 4.5 inches; occipito-frontal arch, 13.8 inches; horizontal periphery, 18.2 inches; diameter of face, 7.1 inches; zygomatic arch, 4.6 inches. This skull is characterized by its lightness, by a considerable degree of symmetry, by a comparatively regular contour or curve in the occipito-frontal arch, by the narrow forehead (the frontal diameter being only 3.9 inches), by the slight compression of the occiput, by the low facial angle, which was only 76°, and by the *prognathous* jaws.

On the other hand, some of the crania were greatly flattened at the occiput, resembling those already described, as well as the crania of the Natchez Indians,

as will be seen from the following measurements of one from a stone grave, on the banks of Big Harpeth, within the line of works at Old Town: internal capacity, 79 cubic inches; longitudinal diameter, 6.1 inches; parietal diameter, 5.8 inches; frontal diameter, 4.6 inches; vertical diameter, 5.5 inches; intermastoid arch, 15 inches; intermastoid line, 4.8 inches; occipito-frontal arch, 13.4 inches; horizontal periphery, 18.9 inches.

The examination of the crania from the stone graves of Old Town in like manner sustained the observation that the occipital flattening presented various degrees, and was scarcely greater in many crania than what might have resulted from the pressure of the mere weight of the infant's head resting continuously on a comparatively hard surface, as in the pappoose case of the North American Indians.

I caused sections to be made of both the pyramidal mounds standing in the portion of the inclosure nearest the spring and running brook, and within thirty feet of each other; the sections were each about 45 feet in length, 5 feet in width, and 12 feet deep.

The internal structure of these mounds was similar to that of the pyramidal mound within the earthwork on the West Harpeth, on the land of Mr. Hughes. It appears that a quantity of earth, about one-third of the height of the mound after its final completion, was thrown up on the original surface of the earth, and carefully levelled. Hot fires were kept constantly burning on this *altar* (?), the heat of which was sufficient to bake and redden the earth for some inches below. Upon the surface of the *altar*, which contained ashes and charcoal and fragments of pottery, another layer of earth was placed, and fire again kindled upon this new level; and thus, finally, the mound was elevated to the present proportions. Pieces of earthenware were scattered through the different layers of the two mounds, and in the larger one an earthenware vessel of considerable size was exhumed. In one portion a collection of gravel mingled with fragments of pottery two feet in diameter was observed.

Upon the sides of the lesser mound several small stone graves were discovered. In 1852, a schoolhouse was erected on the summit of the largest mound, and in levelling and digging the foundation numerous stone graves were said to have been opened.

It would appear, therefore, that these mounds, which were first used for religious purposes, for sacrifices, for the preservation of the sacred fire, or as sites of temples, were after their completion used also as burial mounds.

The proprietor of the mounds and earthworks stated that six years before my explorations an elm tree, twelve feet in circumference just above the roots, stood on the largest mound. I examined the section of a portion of this tree, extending from the centre to within about a foot of the circumference, and it contained 160 rings. Judging from this block the age of the tree must have been more than two hundred and fifty years.

Numerous relics have been discovered from time to time, in and around *Old Town*, but, as far as I could learn, no metallic implements, coins, or utensils of

European manufacture have ever been exhumed from the aboriginal mounds and graves.

Amongst these relics may be mentioned a large stone pipe in the form of a partridge or quail, represented one-fourth the natural size in Fig. 53.

Fig. 53.

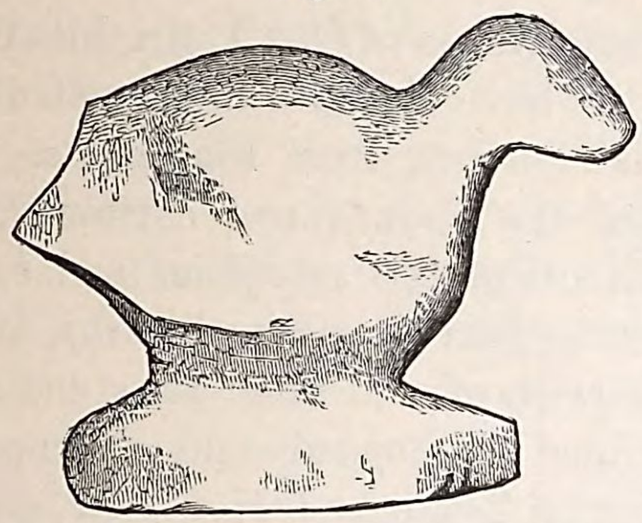


Fig. 54.

Fig. 53. Pipe of coarse yellow sandstone, from Old Town, one-fourth natural size.
Fig. 54. Implement of hard greenstone, from Old Town, banks of Big Harpeth River, Tennessee.

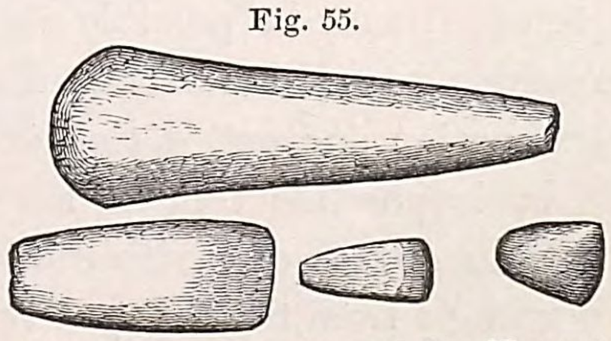
The beautiful implement of greenstone and highly polished, 18 inches in length, represented in Fig. 54, is also worthy of mention.

I have seen several similar stone implements, fashioned upon precisely the same pattern, out of the same hard greenstone, from various parts of the Cumberland Valley. Several conjectures have been formed as to the use of these singular implements. Some have supposed them to have been used in agriculture, the flat head being employed as a spade, and the round handle for making small holes in the earth for the deposit of the grains of Indian corn; others believe that they were used to strip the bark from trees; others again that they were used in dressing hides, in excavating caves, or in felling trees after the wood had been charred by fire. It is possible that they may have been used for all these purposes, and also as warlike weapons, since it would be easy to fracture or to cleave the human skull with a single blow from one of these stone implements.

Numerous stone wedges, hammers, and axes, similar to those represented in Fig. 55, some of which were over one foot in length, have been found from time to time in cultivating the soil within and around Old Town.

The stone hatchets, hammers, wedges, chisels, and fleshing implements were made from hard greenstone, serpentine, limestone, fossiliferous rock, and sandstone. They were probably employed by the aborigines for various purposes, as wedges, hammers for breaking bones and small twigs, for battle-axes, as chisels or wedges, for digging out canoes, and for dressing hides.

Fig. 55.



Celts from the valley of Big Harpeth River, Tennessee. One-eighth natural size.

Numerous spear and arrow-heads have also been found at this locality. They were of various sizes and of various shapes. The material from which they were made was most generally flint and jasper.

Old Town was admirably located for defence, and for an abundant supply of water and fish. On one side it was protected by the steep, abrupt banks of the Harpeth, and on the other, by a deep ravine and stream; whilst the remaining portions were protected by a high embankment, which was most probably crowned by a stockade during the occupation of the aborigines. The surrounding lands also were adapted to the cultivation of Indian corn.

It is worthy of note that the works, mounds, and graves of Old Town, like those of the various aboriginal settlements which we have described, presented the appearance of completion, as if the ancient inhabitants, from some cause, had abandoned their homes. The finished aspect of the mounds and earthworks of Tennessee and Kentucky, the undisturbed contents of the *sacrificial* and *burial* mounds, as well as the unaltered state of the stone graves and earthworks, forced upon me the conviction that these were all the work of the same race, and that, in most instances, after their desertion, they remained without subsequent occupants.

The abandonment of the aboriginal remains of Tennessee, Kentucky, and of several of the Western States by the primitive inhabitants who were at one time very numerous, may be referred to three causes, viz.:—

1. Emigration.
2. Destruction of the entire population by more barbarous and nomadic tribes.
3. Destruction by pestilence.

It is evident from the age of the trees growing in many of these mounds, that they were completed and abandoned long before the discovery and exploration of the North American Continent.

My examinations of the organic and monumental remains, and of the works of art of the aborigines of Tennessee, establish the fact that they were not the relics of the nomadic and hunting tribes of Indians existing at the time of the exploration of the coast and the interior of the continent by the white race; but, on the contrary, that they are the remains of a people closely related to, if not identical with the more civilized nations of Mexico and Central America.

The question, whether the mound builders of the Mississippi valley were the primitive race from which the Toltecs and Aztecs sprang, or whether they were offshoots of these races, cannot at present be definitely settled. A solution of this interesting question, will depend mainly upon a careful exploration of the aboriginal remains of the entire North American continent. When this great work is completed, it may be possible to decide as to the relative age and relationship of the remains in different sections of the continent, and thus to establish the lines of occupation and emigration of the mound builders.

It is possible that it may be finally shown that the races which attained a certain degree of civilization in Mexico and Central America, have all emigrated originally from the valley of the Mississippi, where they had sojourned and multiplied during a considerable period of time. The frequent and devastating wars waged by the Iroquois on the east, and by the Cherokees and Choctaws on the south and west, were evidently subsequent to the migrations of the ancient mound builders and stone grave race of Tennessee, Kentucky, and other Western States.

The numerous stone graves scattered over a belt of country stretching from the

shores of Lake Erie to the borders of the present State of Georgia, are sad but unimpeachable witnesses of the fact that the fertile valleys of Ohio, Kentucky, and Tennessee were once filled with a numerous population; and the earthworks by which the mounds and graves are surrounded, bear testimony to the fierce and continued struggles in which these people were engaged with the more barbarous tribes; and the question arises, as we view these extensive graveyards, by what *pestilence* or *calamity* were they peopled?

In the absence of all written records, and when even the name of the people whose bones fill these rude sarcophagi is a subject of inquiry, the discussion of this question assumes such proportions as to embrace the consideration of the causes which led to the rapid diminution of the aborigines of America, not only after, but also before its discovery by Columbus. Considered in a comprehensive light, this subject should command the attention of the statesman, the philanthropist, and the ethnologist.

The agencies which have, at various times, destroyed vast numbers of the aboriginal inhabitants of America, were pestilence, Matlazahuatl, malarial fevers, smallpox, syphilis, ardent spirits, war, and slavery. Smallpox and ardent spirits committed their ravages after the discovery of America by Columbus. The calamities of war and slavery were greatly extended and intensified by the presence and active agency of the Europeans. That immense numbers of the human race have perished in North and South America, and in the West Indies, as a consequence of the introduction of Europeans, no one at all conversant with the records of history will deny, however much historians may differ as to the original population to be assigned to the different nations of this continent.

Pestilence desolated the cities of the Toltecs in the eleventh century, forced them to abandon Mexico, and to continue their emigrations towards the south, west, and northwest. It invaded the populous cities of Central America, and committed great ravages amongst the tribes which occupied the country between the mountains and the Atlantic Coast, a few years before the landing of the Pilgrim Fathers.

The *Matlazahuatl*, a disease peculiar to the Indian race, seldom appears more than once in a century. It raged in the eleventh century amongst the Toltecs, and also made great ravages among the Mexicans in 1545, 1576, 1736, 1737, 1761, and 1762, and amongst the Indians of the Atlantic coast in 1618 and 1619.

Humboldt has recorded in his "Political Essay on New Spain," the following facts and conjectures with reference to the Matlazahuatl.

"As the latest epidemic took place at a time when medicine was not considered a science even in the capital of Mexico, there are no exact data as to the Matlazahuatl. It certainly bears some analogy to the yellow fever, or black vomit; but it never attacks white people, whether Europeans or natives of the country; while, on the other hand, the yellow fever or black vomit very seldom attacks the Mexican Indians. The principal site of the *vomito prieto* is the maritime region, of which the climate is excessively warm and humid; but the *Matlazahuatl* carries terror and destruction into the very interior of the country, to the central tableland, and the coldest and most arid regions of Mexico. Long before the arrival of Cortez, this epidemical disease had prevailed almost periodically in New Spain,

and it is probably the same plague as that which in the eleventh century forced the Toltecs to continue their emigrations southwards. It is true, no doubt, that the Indians of the valley of Mexico, who perished by thousands in 1761, of the *Matlazahuatl*, vomited blood at the nose and mouth; but these *hæmatemeses* frequently occur under the tropics, accompanying bilious (*ataxique*) fevers; and they were also observed in the epidemical disease which prevailed over all South America, from Potosi and Oruro to Quito and Popayan, and which, from the incomplete description of Uloa, was a typhus peculiar to the elevated regions of the Cordilleras." The physicians of the United States, who adopt the opinion that the yellow-fever originated in the country itself, think they discover the disease in the *pests* which prevailed in 1535 and 1612 among the red men of Canada and New England. From the little which we know of the *Matlazahuatl* of the Mexicans, we might be inclined to believe that, in both Americas, from the remotest periods, the copper-colored race has been subject to a disease which, in its complications, resembles in several respects the yellow fever of Vera Cruz and Philadelphia, but which differs essentially from it in the facility with which it is propagated in a cold zone, where the thermometer during the day remains at 10° or 12° Centigrade (50° and 53° of Fahrenheit), and in the interior of the country, on the central table land, at twelve or thirteen hundred toises above the level of the sea.

Father Torribio, a Franciscan, better known by his Mexican name of Motolinia, asserts that the smallpox, at its introduction in 1520 by a negro slave of Narvaez, carried off half the inhabitants of Mexico.

Torquemada advances the hazardous opinion that, in the two Matlazahuatl epidemics of 1545 and 1576, 800,000 Indians died in the former, and 2,000,000 in the latter.[1]

During the four centuries in which the monarchy of the Toltecs flourished, they multiplied considerably, extending their population in every direction, founding numerous and large cities, and building those great monuments which required the united efforts of multitudes for their completion; but the calamities which happened to them in the first year of the reign of Topiltzin, A. D. 1031–1052, gave a fatal shock to their prosperity and power; for several years their country was afflicted with such a protracted and severe drought, that their fields failed to yield them the necessary fruits; the air, infected with mortal contagion, filled the graves with the dead, and the minds of the survivors with consternation—a great part of the natives died by famine and sickness, and the wretched remains of the nation, in order to save themselves from the common calamity and from utter destruction, deserted Mexico and sought relief from their misfortunes in other countries. There was, therefore, in this desolating plague of the Toltecs, the usual association of *famine* and *pestilence*; and it is probable that, as in the history of many other nations, the former was the cause of the latter, and that the disease probably partook of the nature of the *typhus* and *typhoid fevers* of the present day.

The gentleman of Elvas, in his "Narrative of the Expedition of Hernando De Soto," states that in the pleasant and fertile country, in the neighborhood of the

[1] Political Essay on the Kingdom of New Spain, vol. i, pp. 117–118; vol. iv, pp. 135–137.

town of Cutifachiqui, "there were great towns dispeopled, and overgrown with grass; which showed that they had long been without inhabitants. The Indians said that two years before there was a plague in that country, and that they removed to other towns."

A terrible pestilence wasted the American Indians in 1618 and 1619, a short time before the Pilgrim Fathers landed in Massachusetts. Captain Dermer, an English adventurer, who had come to America in a fishing vessel a year or two before, passed the winter of 1618–19 in Mohiggan, an Indian town on the northern coast. On the 19th of May, 1619, he sailed along the coast on his way to Virginia, and landed at several places where he had been the year before; and he found many Indian towns totally depopulated—in others only a few natives remained alive, "but not free from sickness, their disease being the plague, for we might perceive the sores of some that had escaped, who described the spots of such as usually die." He found some of the villages, which in his former visit were populous, all deserted, "the Indians all dead."[1]

Richard Vines and his companions, who had been sent by Fernando Gorges to explore the country, wintered among the Indians during the pestilence, and remained untouched, the disease attacking none of the English.[2]

Gookin,[3] in his account of the Indians, places this pestilence in 1612–13, and about seven or eight years before the English arrived at Plymouth. It would appear from this statement that the disease began to rage a number of years previously to 1618. In a sermon preached by Elder Cushman at Plymouth, in 1620, just after the colony arrived, he states that the Indians "were very much wasted of late, by a great mortality that fell amongst them three years since, which, with their own civil dissensions and bloody war, hath so wasted them as, I think, the twentieth person is scarce left alive."[4] This pestilential distemper continued for a number of years, for some of the Plymouth settlers who went to Massachusetts (now Boston) in 1622, to procure corn of the natives, "found among the Indians a great sickness, not unlike the plague, if not the same." It raged in winter, and affected the Indians only.[5]

So fatal was the pestilence in North America, that the warriors, from Naragansett to Penobscot, were reduced from nine thousand to a few hundreds. Hutchinson says thirty thousand of the Massachusetts tribes alone were supposed to have been reduced to three hundred. When the Pilgrims arrived in 1620, they found the bones of those who had perished, in many places, unburied.[6] Dermer seems to think that this disease was a species of plague, and he saw some of the sores of those who had survived. Hutchinson says, "some have supposed it to have been the smallpox, but the Indians who were perfectly acquainted with this disease, after the English arrived, always gave a different account of it, and described it as a pestilential putrid fever." General Gookin says, "What the disease was, which so generally and mortally swept them away, I cannot learn; doubtless it was some pestilential

---

[1] Purchas, vol iv, 1778.
[2] Belknap's Life of Gorges, American Biography, vol. i, p. 355.
[3] Historical Collections, p. 8.
[4] Hazard's Collection, vol. i, p. 148.
[5] Prince's Chron., p. 124.
[6] Magnolia, Book 1, p. 7.

disease. I have discoursed with some Indians who were then youths, who say that the *bodies all over were exceedingly yellow* (describing it by a yellow garment they showed me) both before they died and afterwards." Noah Webster[1] concludes from this account, that the "*pestilence was the true American plague called yellow fever*," and he sustains this view by the statement in Prince's Chronology, that the fever was attended with hemorrhage from the nose. Webster cites this as an example of the origin of yellow fever in this country. This supposition cannot be maintained, as the pestilence prevailed in the winter with the greatest severity; and we are not justified in adopting the conclusion of Webster, simply because there was a general yellowness of the skin attended with hemorrhages from the nose.

About 1745, a malignant epidemic disease prevailed amongst the Indians, but did not affect the whites, and which in like manner Webster considered as the "infectious yellow fever." The patients are said to have first complained of a severe pain in the head and back, which was followed by fever. In three or four days the skin turned as yellow as gold, a vomiting of black matter took place, and generally a bleeding at the nose and mouth, which continued till the patient died. These symptoms resemble, to a certain extent, those of the disease known to the Mexicans as *Matlazahuatl;* and also those which characterize the *malarial hæmaturia*, which, since the civil war, has prevailed to a considerable extent in the Southern States, and has been attended with a high rate of mortality. The Indians, in common with the whites, were subject to the various forms of malarial fever (intermittent, remittent, and congestive, and malarial hæmaturia) and it is well known that in the first settlement of both North and South America, the Spanish, French, and English colonists suffered terribly from these diseases. Many of the most flourishing and populous settlements were in a few years almost depopulated by these fevers, which committed the greatest ravages in those towns and colonies which were located near the mouths of large rivers, in low marshy regions. Entire armies were thus destroyed. The pioneers who cleared the forests and drained the low-lands were either suddenly cut off by these high grades of bilious fevers which were often attended with a universal yellowness of the skin (jaundice) and incessant vomiting of bilious matter which was sometimes mixed with blood (black vomit); or were slowly poisoned by the malaria of the marshes and swamps, and dragged out a miserable existence, rendered almost intolerable by enlargement of the spleen and liver, by derangement of the blood and nervous system, and by neuralgia and dropsy. In that form of malarial fever characterized by complete jaundice, intense vomiting, nausea, and hemorrhage from the kidneys, which has received different names at various times and in divers countries, and which is no "new disease," even in the United States, the hemorrhage from the kidneys is preceded by congestion of these organs, and is attended with desquamation of the excretory cells and tubuli uriniferi. Whilst some of the symptoms, as the nausea and incessant vomiting—and in extreme cases black vomit,—the deep jaundice, and impeded capillary circulation, resemble those of yellow fever, yet there are marked differences between the two diseases.

---

[1] History of Epidemic and Pestilential Diseases, etc., 1799, vol. i, pp. 176–177.

As it is well established that malarial hæmaturia and the severer and more fatal forms of malarial fever prevailed only in certain years, and appeared to be dependent, to a large extent, on the degree of heat and moisture, as well as on the amount of organic matter in the soil; as these epidemics in the tropical and temperate regions of America are often of the widest extent and severest character; as the Indians suffered to an almost equal degree with the whites, and were, in North America, without the most important remedies, bark and quinine, it is but reasonable to suppose that, in certain seasons, large numbers perished by these diseases. And were it not for the free use of quinine in the treatment of paroxysmal fevers, many portions of the Southern cities would, from time to time, have been depopulated. Even in the more elevated regions of the country, such as those formerly inhabited by the mound-builders, the mortality from these diseases would now be very great, but for the beneficial effects of this remedy.

The origin of the *American plague or typhus* (vomito prieto, yellow fever) is involved in doubt, on account of the prevalence in the tropical, sub-tropical, and temperate regions, both amongst the natives and foreigners, of severe forms of malarial fever, often attended with jaundice, and sometimes with black vomit. If it could be determined at what time this terrible disease was clearly recognized by the medical profession and historical writers, as distinct from malarial fever, and as dependent on a specific cause, or upon a combination of causes peculiar to this fever, a firm ground for the discussion of its origin and its relations to the native population, as well as to the foreign elements on the American Continent, would be established. But it is well known that many of the older descriptions will apply as well to the severer forms of malarial fever, as to yellow fever; and also that the distinction of the one from the other has been the result of comparatively recent labors; and even at the present time there are not a few physicians who hold to the identity of these two diseases in their origin and essential nature.

If the history of yellow fever in the Western Hemisphere be considered, it will be found that the accounts and dates of its origin vary with the extent and character of the information of the writers in each city, locality, or island. Thus the French writers call it *Maladie de Siam*, and hold the tradition that the disease had been imported in the ship Oriflamme, which sailed with French colonists from Siam in the latter part of the year 1690. But it can be proved that the Oriflamme touched at Brazil, where yellow fever had been prevailing for several years, and Father Labat, who arrived at Martinico on the 29th of January, 1694, tells us that the passengers of the ship caught the disease in Brazil. Equally incorrect was the account given by Dr. Henry Warren of its introduction into Barbadoes between the years 1732 and 1738. It appears, however, from the statements of Mr. Richard Vines, a planter and practitioner of physic at Barbadoes, that yellow fever prevailed with destructive effects, as *an absolute plague*, as early as the year 1647; and Dr. Edward N. Bancroft, in his "Essay on Yellow Fever," suggests that it was called a *new distemper* in 1691 and 1694 because all who had had any accurate knowledge of it in 1647 were probably dead or removed.

Dr. Hillary, who enjoyed a high reputation as a successful practitioner and learned physician in Barbadoes, affirms that yellow fever appears to be a disease

indigenous to the West Indies, and to that part of the continent of America which is situated between the tropics.

The testimony of Humboldt is similar to that of Dr. Hillary, who held that the *vomito* has been endemical at Vera Cruz, Carthagena, and Havana, from the very foundation of these cities by the adventurers from Europe; and that this disease has appeared in the two continents and in the West Indies, whenever bodies of men born under a colder zone have exposed themselves in the low regions of the torrid zone.

The preceding facts show the fallacy of attempting to decide with certainty the date of the origin of yellow fever, from the statements of the writers of any one locality; and they also show the impropriety of confounding the period at which a disease has been first described on account of its having committed ravages in some particular locality and time, with the period of its first appearance.

Smallpox has caused a greater destruction and more rapid depopulation of the aborigines of insular and continental America, than all other causes combined.

In North America, the wholesale butcheries and cruel slavery of the Spaniards, the deadly rifle and cannon, and the still more deadly vices of the French and English, would have accomplished comparatively slow and uncertain results, but for the epidemic of smallpox, which, since its introduction in 1520 by a negro in the expedition of Narvaez, has committed its ravages periodically, and swept away whole tribes and nations.

After the discovery of Hispaniola by Columbus in 1492, and of the contiguous continents by other adventurers in succession, a general exchange of diseases, remedies, and natural productions, soon ensued between Europe and the newly discovered countries; in return for syphilis, a venereal distemper which was said to have been, up to that time, unknown in any part of Europe, the smallpox was communicated to the American Indians, and, at different intervals, committed such ravages amongst the natives (in whom, from their peculiar constitution, habits, and modes of medical treatment, the poison acted with peculiar power) as had well nigh swept them from the continent.

The spread of the smallpox, on its first introduction into Mexico in 1520, has been compared to the rapid march of fire over the western prairies. It first broke out in Cempoala, thence it spread rapidly over the neighboring country, and, penetrating through Tlascala, reached the Aztec Capital, where Cuitlahuac, Montezuma's successor, fell one of its first victims. Thence it swept down towards the borders of the Pacific, smiting down prince and subject, leaving its path strown with the dead bodies of the natives, who perished in heaps, like cattle stricken with the murrain. One-half of all the Indians attacked are said to have died, and this high rate of mortality is attributable partly to the crowded state of the cities and villages, but chiefly to the fact that the poor natives were ignorant of the best mode of treating the disease, and sought relief in their usual practice in febrile complaints, of bathing in cold water, which greatly aggravated the loathsome pestilence. According to Torquemada, there died in the Empire of Mexico alone, in this epidemic, three millions and a half; and Clavigero states, in his "History of

Mexico,"[1] that, in the epidemic of 1545, eighty thousand perished; and, in that of 1575, upwards of two millions died in the dioceses of Mexico, Angelopoli, Michoacan, and Guaxaca alone. Clavigero affirms that this information was derived from the bills of mortality presented by every curate to the viceroy.

Dr. Servando,[2] an Ecclesiastic, gives, in a letter dated London, January 10th, 1813, the following facts with reference to the history of smallpox in the American continent:—

"The smallpox, as well as the measles, was unknown in New Spain before the conquest. They were brought there, says Torquemada, by a negro from Pamsilo; and they occasioned such destruction, that he does not hesitate to affirm that the greatest part of the Indians died, among whom was the Emperor Cuitlahuac, who succeeded Montezuma. It is stated, that, according to the reports which Cortez ordered to be made to him, there died in the Empire of Mexico alone, three millions and a half. It was not long before fresh variolous infection was brought over, and, according to Torquemada, eight hundred thousand Indians perished. Europe has continued to communicate this scourge at intervals of thirty, twenty, or a less number of years; and the infection, extending itself from Vera Cruz to the most remote parts, has, like a destructive plague, spread terror, death, and desolation over that continent. The longer it is retarded the more fatal it becomes, because the danger increases with the age of the sufferers. Thirty-three years ago, more that ten thousand persons were carried off in the towns of Mexico and Puebla alone by this contagion, which was the last but one that has visited that kingdom, and was brought to them after an interval of nineteen years. It was from this last attack, that I was a sufferer in my native country, Monterey, the capital of the new kingdom of Leon; and there was not a family that did not put on mourning. Some of these families disappeared altogether, because they were all adult persons and had been seized by the epidemic in the city. Those who lived in the country were preserved from its influence by banking the dunghills of the large and small cattle around their dwellings. . . . .

Torquemada says, speaking of the first introduction of the infection, that the reason why it killed so many was, that the Indians were ignorant of the nature of the disease, and bathed and scratched themselves.

In the new kingdom of Leon there were bands of wandering natives so warlike, that the Spaniards could not, with arms in their hands, resist their attacks upon their towns; the smallpox, however, extirpated almost all of them; and fifty years ago, heaps of bones, like so many trophies of the disease, were to be seen under the old tufted oaks in the fields. At the present time when a savage sees one of his companions attacked with the infection, he leaves him, his horse, and his possessions, and flees to a great distance in the woods. It has never happened that the Spaniards have secured themselves against infection by stopping their communications with the Indians."

Smallpox did not, in these early visitations, confine its ravages to Mexico, but

---

[1] Vol. iii, p. 393.

[2] Observations on the Different Kinds of Smallpox, by Alexander Monro, Edinburgh, 1818, p. 7.

desolated the great cities of Central America. In 1588 it was carried into Peru, and still later into Paraguay, where it is said to have proved more fatal to the natives than in any other part of the world, hardly any recovering from the disease; amongst the adult Indians of Brazil, who used to go naked, and to paint their skin, it was generally certain death.

According to Humboldt,[1] the smallpox committed terrible ravages in 1763, and especially in 1779, in which year it carried off in the capital of Mexico alone, more than nine thousand persons. Every evening tumbrels passed through the streets to receive the corpses, as at Philadelphia during the yellow fever. A great part of the Mexican youth were cut down that year.

The epidemic of 1797 was less destructive, chiefly owing to the zeal with which inoculation was propagated in the environs of Mexico, and in the bishopric of Michoacan. In the capital of this bishopric, the city of Valladolid, of six thousand eight hundred inhabitants inoculated, only one hundred and seventy, or 2½ per cent., died; and several of those who perished were inoculated at a time when they were probably already infected in the natural manner. Fifteen in the hundred died, embracing individuals of all ages, who, without being inoculated, were victims of the natural smallpox. There were then inoculated in the kingdom, between 50,000 and 60,000 individuals.

In the month of January, 1804, the *vaccine inoculation* was introduced into Mexico, through the activity of Dr. Thomas Murphy, who brought the virus several times into North America. This introduction found few obstacles; the cow-pox appeared under the aspect of a very trivial malady; and the smallpox inoculation had already accustomed the Indians to the idea, that it might be useful to submit to a temporary evil for the sake of avoiding a greater. Humboldt further observes: "If the vaccine inoculation, or even the ordinary inoculation, had been known in the New World in the sixteenth century, *several millions of Indians would not have perished victims to the smallpox*, and particularly to the absurd treatment by which the disease was rendered so fatal. To this disease, the fearful diminution of the number of Indians in California is to be ascribed."

The ships of war commissioned to carry the vaccine matter into America and Asia arrived at Vera Cruz shortly after the visit of Humboldt.

Don Antonio Valmis, physician general of this expedition, visited Porto Rico, Cuba, Mexico, and the Philippine Islands; and his stay at Mexico, where nevertheless the cow-pox was known before his arrival, contributed singularly to facilitate the propagation of the vaccine disease. In the principal cities of the kingdom, vaccine committees were formed (*Juntas Centrales*) composed of the most enlightened individuals, who, by vaccinating monthly, preserved the matter from being lost. Valmis discovered the cow-pox, in the udders of Mexican cows, in the environs of Valladolid, and in the village of Alesco near La Puebla.

The ravages occasioned by the smallpox in the torrid zone, among a race of men whose physical constitution seemed adverse to cutaneous eruptions, placed in a still clearer light the value and importance of Jenner's discovery, which was

---

[1] Political Essay on the Kingdom of New Spain, vol. i, pp. 111–116.

thought to be a much greater blessing for the equinoctial parts of the new continent than for the temperate climate of the old.

Humboldt has recorded facts which would seem to show that the protective powers of cow-pox were known in Peru before the discoveries of Jenner.

The ravages of smallpox were not confined to the more populous and more highly civilized countries of North and South America, but extended into wide regions; and the disease was introduced amongst the tribes and nations inhabiting the country embraced within the present limits of the United States, at different times, by the various exploring expeditions and colonies. The history of many of these devastating visitations of smallpox has never been recorded, and whole tribes and nations within the interior of North America have been destroyed, without a single record of their miserable sufferings. William Robertson states, in his "History of America," that, in 1632, the smallpox swept away such multitudes of the natives of North America, and especially of the regions along the Atlantic coast, that whole tribes disappeared. Lawson, Adair, and many other writers have recorded the desolation wrought among the various tribes of Indians by smallpox at various periods.

The powerful nation of the Katahbas, which, in the early history of South Carolina, numbered several thousand warriors, in 1743 could muster scarcely 400 men. In 1738, smallpox destroyed one-half of the great Cherokee nation; and the Muskohgees, Uchees, Shawanese, Chactaws, Chickasaws, Natchez, and a host of other tribes have suffered to an equal extent.

In describing the Sewees of South Carolina, John Lawson[1] says: "These Sewees have been formerly a large nation, though now very much decreased since the English hath seated on their lands, and all other nations of Indians are observed to partake of the same fate; when the Europeans come, the Indians, being a people very apt to catch any distemper, they are afflicted withal; the smallpox has destroyed many thousands of these natives, who, no sooner than they are attacked with violent fevers and the burning which attend that distemper, fling themselves over-head in the water, in the very extremity of the disease, which, shutting up the pores, hinders a kindly evacuation of the pestilential matter and drives it back, by which means death most commonly ensues."

In 1832, ten thousand, or about one-half of the tribe of the Pawnees, were destroyed by smallpox introduced by the fur traders and whiskey sellers. In 1837, this malady swept through the Missouri Valley. It broke out among the Mandans, and reduced the number of this tribe from 1600 to 31. It reduced the Minnetarees from 1000 to 500; the Arickarees from 3000 to 1500; the Assiniboins, a tribe of 9000, and the Crows, estimated at 3000, lost about one-third of their number; and the Blackfeet, estimated at 30,000, lost about 8000. Schoolcraft estimates that, at a moderate calculation, no less than 10,000 Indians fell before this terrible scourge in a few weeks.

According to George Catlin: "The system of trade, and the smallpox, have been the great and wholesale destroyers of these poor people, from the Atlantic

[1] Voyage to Carolina, p. 19, 224.

Bayerische Staatsbibliothek MÜNCHEN

coast to where they are now found. And no one but God knows where the voracity of the one is to stop, short of the acquisition of everything that is desirable to money-making man in the Indians' country; or when the mortal destruction of the other is to be arrested, whilst there is untried flesh for it to act upon, either within or beyond the Rocky Mountains.

"I would venture the assertion, from books that I have searched, and from other evidences, that, of numerous tribes which have already disappeared, and of those that have been treated with, quite to the Rocky Mountains, each one has had this exotic disease in its turn, and in a few months has lost one-half or more of its numbers; and, from living witnesses and distinct traditions, this appalling disease has several times, before our day, run like a wave through the Western tribes, over the Rocky Mountains, and to the Pacific Ocean, thinning the ranks of the poor Indians to an extent which no knowledge, save that of the ever-looking eye of the Almighty, can justly comprehend."[1]

Mr. Catlin[2] thus describes the sufferings of the Mandans by this disease, at the time of their extinction, in the summer of 1838.

"It seems that the Mandans were surrounded by several war parties of their more powerful enemies, the Sioux, at that unlucky time, and they could not, therefore, disperse upon the plains, by which many of them could have been saved; and they were necessarily inclosed within the piquets of their village, where the disease in a few days became so very malignant, that death ensued in a few hours after its attacks. So slight were their hopes, when they were attacked, that nearly half of them destroyed themselves with their knives, with their guns, and by dashing their brains out by leaping, head foremost, from a thirty-foot ledge of rocks in front of their village.

"The first symptom of the disease was a rapid swelling of the body, and so very virulent had it become, that very many died in two or three hours after their attack, and that in many cases without the appearance of the disease upon the skin. Utter dismay seemed to possess all classes and all ages, and they gave themselves up in dismay, as entirely lost. There was but one continual crying and howling, and praying to the Great Spirit for his protection, during the nights and days; and there being but few living, and those in too appalling despair, nobody thought of burying the dead, whose bodies, whole families together, were left in horrid and loathsome piles in their own wigwams, with a few buffalo robes, etc. thrown over them, there to decay and to be devoured by their own dogs. . . It spread to other contiguous tribes, to the Minnetarees, the Knisteneaux, the Blackfeet, the Cheyennes, and Crows, among whom twenty-five thousand perished in the course of four or five months."

The Reverend Mr. Parker, in describing his tour across the Rocky Mountains, says that amongst the Indians below the falls of the Columbia, at least seven-eighths, if not nine-tenths, as Dr. McLaughlin believes, have been swept away by disease between the years 1829 and the time that he visited the place in 1836. "So many and so sudden were the deaths which occurred, that the shores were

---

[1] North American Indians, vol. ii, p. 774.

[2] Vol. ii, p. 779.

strewed with the unburied dead; whole and large villages were depopulated, and some entire tribes have disappeared."

This mortality, he says, "extended not only from the cascades to the Pacific, but from very far north to the coast of California."

These facts, which might be greatly multiplied, show clearly how entire nations might have been destroyed in the interior of the country, as in Tennessee and Kentucky, and in the great valley of the Mississippi, by an epidemic, without leaving any records or memorials, except their sepulchres, bones, mounds, earthworks, stone implements, pottery, and objects of worship.

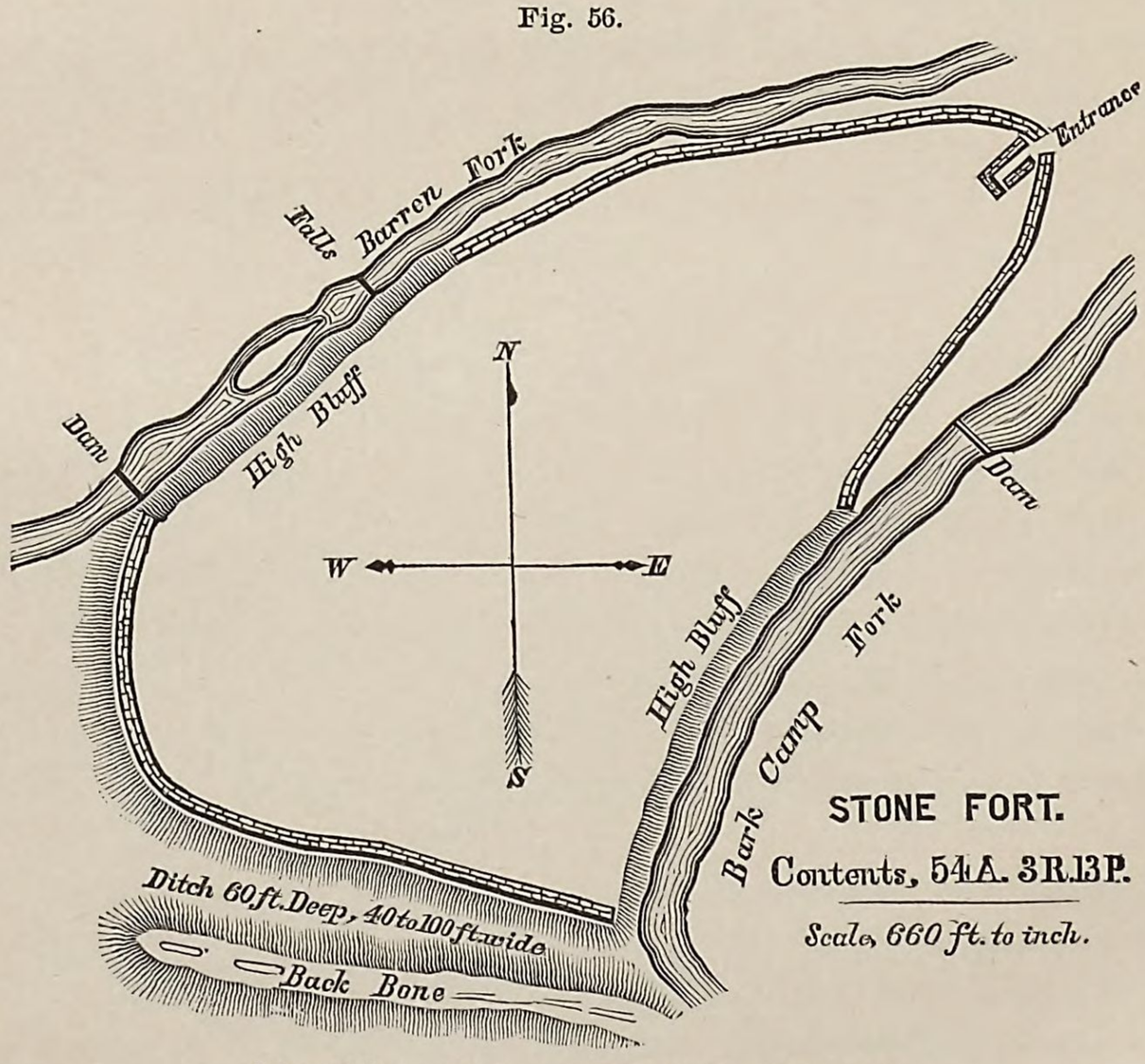
CHAPTER VI.

THE STONE FORT AND OTHER ABORIGINAL REMAINS.

THE stone work, or fortification, in Coffee County, Tennessee, situated at the junction of the east and west branches of Duck River, near Manchester, and known as the Stone Fort, has been described at length, by Haywood and in the "Ancient Monuments of the Mississippi Valley;" we shall, therefore, confine our observations chiefly to supplying certain deficiencies in these descriptions.

The account and plan of the Stone Fort given by Squier and Davis, are copied from the "Western Messenger," and the errors are due to the writer of the article. In this plan the entrance is especially defective. At the time of my visit to the locality, I found a plan by E. W. Nance, which in like manner presented some inaccuracies. Mr. W. A. Thoma, a resident of Manchester, therefore kindly re-surveyed the works at my request, and executed the plan which will be found below, Fig. 56.

Fig. 56.



Plan of Stone Fort, near Manchester, Tennessee.

The wall, which now varies from four to ten feet in height, is composed of loose rocks gathered apparently from the bed of the streams below, and from the sides

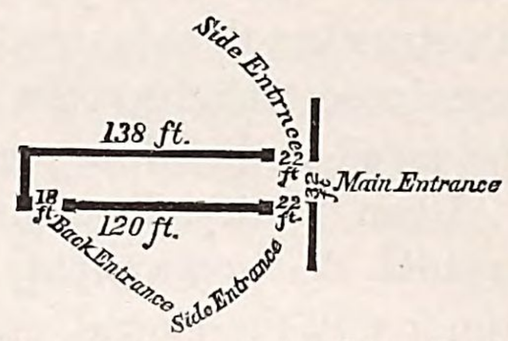
of the hills and bluffs. These rocks exhibit no marks of the hammer or of any other mechanical instrument. They have been piled promiscuously together without any regularity, and in some portions of the wall, earth has been freely mixed with them, and also heaped upon the top of the structure. Where the bluff is steep and impassable, the wall ceases, as is shown in the preceding plan.

The ditch in the rear of the works, extending from one branch of the river to the other, is supposed to have been designed to convey water across, thus isolating a high ridge of limestone rocks, called the Back Bone, which overlooks and commands the Stone Fort.

The entrance to the fortification deserves attention. On either side of the main entrance on the north, the wall composed of loose stones has been strengthened, forming what have been described as stone mounds. These more elevated terminations of the wall probably served as lookouts, or positions for defensive stockades and towers. They are about three feet higher than the main wall. Two stone walls extend back from the main entrance, one of which bends at right angles, leaving a space for a back entrance, as represented in Fig. 57.

The ends of the stone walls facing the main entrance on the inside are enlarged and elevated similarly to those of the outer wall already described. The largest of these foundations for defensive towers, is about sixteen feet square and ten feet high.

Fig. 57.



Plan of entrance to the Stone Fort.

The ditch being on the inside of the wall, the side entrances are deep and narrow, and capable of admitting not more than two men abreast.

Several large forest trees are still standing within the inclosure and upon the walls, and Haywood states that, on the seventh of August, 1819, Colonel Andrew Ewing caused to be cut down a white oak tree, which grew upon the top of the wall, and that Major Maury and himself counted 357 rings. Colonel Ewing says: "The wall is mouldered down, so as to be at present about sixteen feet wide on the surface of the earth, and about six feet high. The rocks are covered with earth and appear like a hedge along an old ditch. One-half or more of the rock is a slate copperas ore, taken out of the bottom of the creek, on either side of the fort." "The age of the tree," remarks Haywood, "was seventy-eight years when De Soto landed in Florida, and thirty years when Columbus discovered America."

I carefully searched the enclosure for stone graves and relics, but discovered nothing relating to the aborigines. As the fort had been used by soldiers during a portion of the recent war (1861–1865) for a camping ground, and as a mill had been erected on the Barren Fork, fragments of iron utensils and of copper are occasionally found, also lead bullets, but these are clearly of modern date. Haywood says: "Captain Eastand attempted to cultivate a part of the ground within the *fort*, and, on the first attempt, in running a deep furrow, ploughed up a piece of flint glass, about one inch thick, and remarkably transparent; it appeared to be a piece of a bowl, very neatly fluted on its sides. There was also found a stone,

very beautifully carved and ornamented, much superior to any known work of the Indians."

Upon careful inquiry amongst the citizens of Manchester, I could gather nothing whatever concerning these relics, neither could I learn that any others had ever been found within the inclosure.

A large oblong mound (composed of slabs and bowlders, similar to those employed in the construction of the *Stone Fort*), situated directly in front of the main entrance to the fort, and about three-quarters of a mile distant, is 600 feet in circumference, and 30 feet in height.

I caused a shaft ten feet square to be sunk into the summit of this mound. This excavation revealed the fact that, whilst the exterior and sides of the mound were formed of loose rocks, the central portion is composed of earth.

At the depth of four feet, a wooden coffin in a decayed state was reached. The boards had been neatly planed, united by tongue and groove, and fastened with wrought iron nails. The bones of the skeleton were soft and much decayed. The cranium was symmetrical in its outline, and not at all flattened at the occiput. The forehead was broad, and the bones of the face of moderate size and not prominent. Nasal bones prominent. Lower jaw of small size, and more delicate in its structure than is usual in the crania of the aboriginal stone-grave race. I was convinced that the coffin and skeleton were of modern date, and that the cranium belonged to the white race.

Upon inquiry, I was informed by the proprietor, who resided at the foot of the mound, that some twenty years ago a stranger was taken ill in his dwelling near the foot of the mound, and left as his dying request, that he should be buried in its summit.

The wooden coffin and human remains were therefore of recent origin. I was surprised to find the bones so much more decayed than those of many of the aborigines in the stone graves. I could account for this difference only in one of two ways. Either the bones of the aboriginal race were more dense than those of this stranger, or else the aborigines carefully removed the flesh and oiled the bones before depositing them in their last resting-place, surrounded them with skins and matting, and protected them with the rude stone coffins. The shaft was carried several feet below the position of the coffin, without discovering anything of interest. I had neither the means nor the time to make a complete section and exploration of this mound.

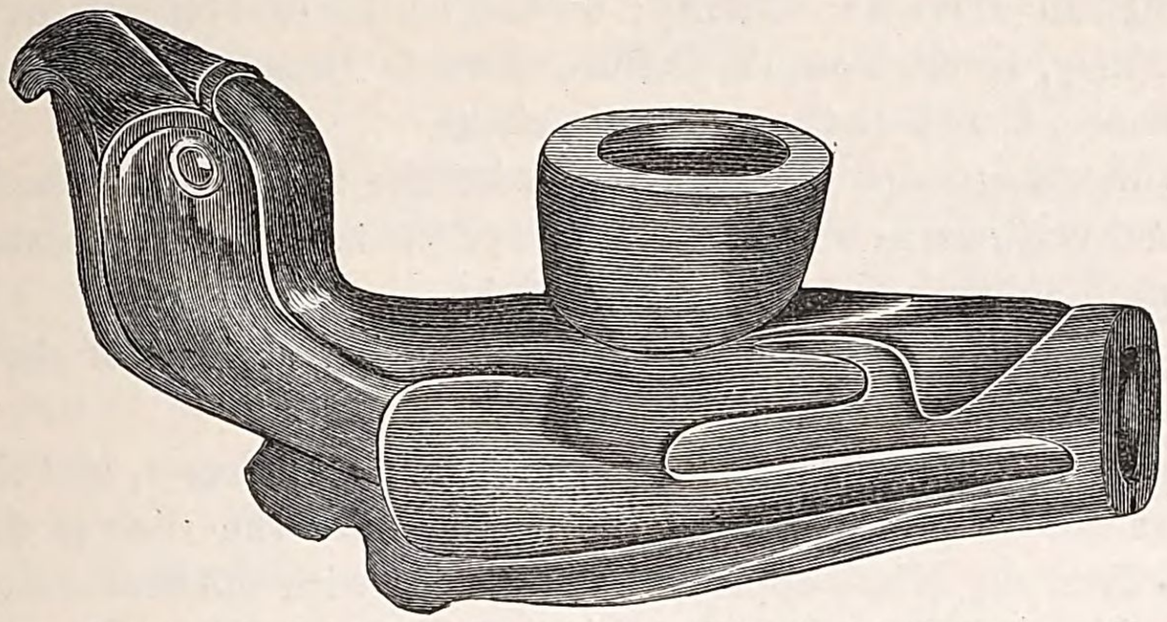
Upon careful examination, I found the other mound, which had been described by former observers as lying about half a mile distant, on the northwest of the fort, not to be, as has been stated, similar to the one just described, and composed of loose rocks, but simply a natural, round rocky hill.

The cave in the river bank below formerly contained human bones, and it has been worked for saltpetre at different times. The pile of rubbish which had been removed from the cave by the nitre manufacturers, was also composed in large measure of the fragments of human bones.

Earthen vessels, pipes, and stone implements are said to have been discovered in the cave by the first explorers.

The stone pipe represented below (Figure 58) was found in this immediate vicinity.

Fig. 58.

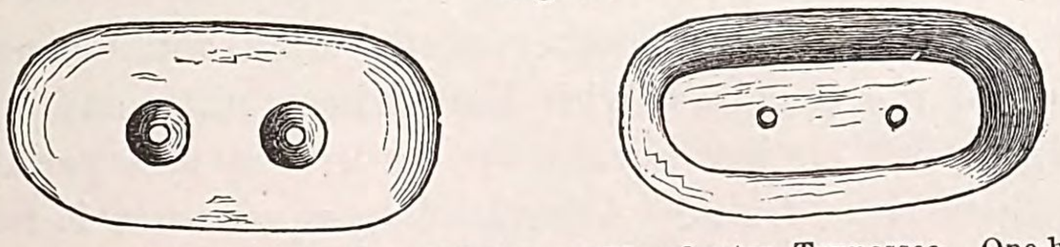


Stone pipe found near the Stone Fort and Cave in the vicinity of Manchester, Tennessee. About one-half of the natural size.

This pipe was carved from beautiful dense chocolate-colored steatite, and represents a bird of prey, most probably the bald eagle.

The low-lands bordering on Duck River in the vicinity of the Stone Fort appear to have been thickly inhabited and extensively cultivated by the aborigines. In the fields along the valley of Duck River, I found numerous arrow and spear-heads, fragments of pottery and silex, several stone hatchets and chisels, and the oval flat stone, pierced with two circular holes, and represented in figure 59.

Fig. 59.

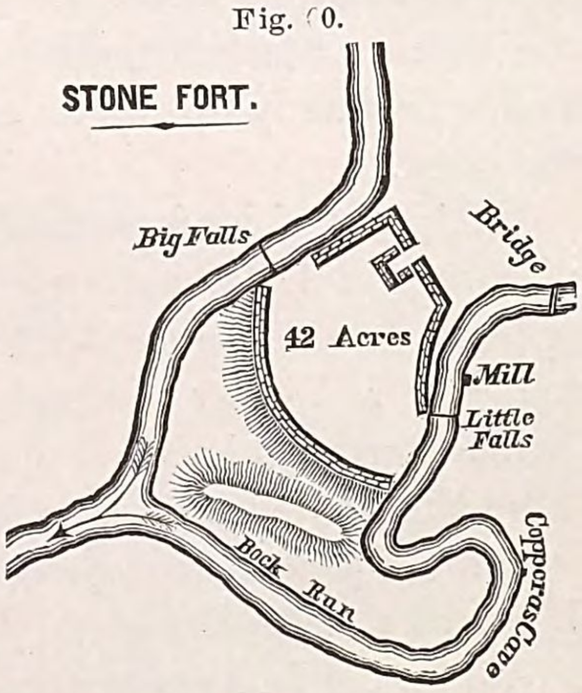


Stone implements from the vicinity of the Stone Fort, near Manchester, Tennessee. One-half the natural size.

In the woods northwest of the fort, several piles of rock were observed, about two feet high and ten feet in diameter. When these were removed, they were found to have covered a layer of ashes, charcoal, and burnt earth. They are supposed to have marked the place of the incineration of human bodies. These were the only remains resembling graves which were discovered.

Figure 60 is a copy of the plan, executed by E. W. Nance, and represents the Stone Fort as inclosing only forty-two acres. Haywood states that the fort contained thirty-three acres of land within its walls. In the plan of E. W. Nance, the general shape also is incorrectly given.

Fig. 60.



Plan of the Stone Fort, near Manchester, Tennessee, as executed by E. W. Nance.

Numerous other localities might be mentioned, where interesting aboriginal remains have been observed, as at Castalian Springs; Bledsoe's Lick, in Sumner Co.; on the Big Harpeth near the mouth of Dog Creek; on the Cumberland River above Nashville, in Davidson County; on the banks of Harpeth in Williamson County; on Piney, Duck, Powel's, Collins, French Broad, Hatchy, Forked-deer, Obed's, Tennessee, Caney Fork, and other rivers.

Those who would attempt to assign some definite age to the Stone Fort, and to the mounds and earthworks of Tennessee and of the adjacent States, should not fail to accord to the following facts their full weight.

At the time of the discovery of America, a portion at least of the Mississippi Valley was inhabited by the Mound Builders.

The testimony of the earliest Spanish and French explorers, and the traditions of the Indians, concur in establishing the fact, that, at the time of the discovery of North America, the Mississippi Valley, together with the States now known as Alabama, Florida, and Georgia, was inhabited by powerful and warlike nations, who cultivated the soil, lived in fortified towns, adored the sun, and had temples located upon artificial mounds, in which idols were enthroned and worshipped.

Ponce de Leon, who visited the continent in 1512 and discovered a country of vast and unknown extent, to which he gave the name of Pasca Florida, in his subsequent attempts to erect a town and fortress upon the coast, was assailed with such vigor by the natives, that he was compelled to abandon the country.

Ponce de Leon lost the greater part of his men from the arrows of the Indians, and himself received a mortal wound.

De Ayllon, who, in 1520, visited the coast of South Carolina, in that portion which lies near to the mouth of the Combahee River, decoyed and carried off from the Island of St. Helena, a large number of the kind and unsuspecting natives, who had entertained the Spaniards with liberal hospitality, and upon his second voyage, in 1524, met with a just reward for the cruelty and perfidy which subsequently yielded such bitter fruits. After landing upon what is now the coast of Georgia or South Carolina, two hundred of his soldiers penetrated a few leagues into the interior, whilst he remained with the rest of his force to guard the ships; the Indians attacked and massacred the whole of the detachment sent out, and then, falling suddenly upon the guard near the ships, succeeded in driving them from the coast.

The point of land reached by the Florentine, John Verrazzani, in his voyage of discovery in 1524, appears to have been somewhere about Wilmington, in the present state of North Carolina, near where the English, seventy years afterwards, under Sir Walter Raleigh, made the first attempt at colonizing America. When Verrazzani visited the Indians of the southern portion of what now constitutes the United States, he found them "gentle and courteous in their manners, of sweet and pleasant countenances, and comely to behold." Pursuing a simple and innocent style of living, they numbered a large population.

While the Indians of the south were enabled by the fertility of the soil to cultivate various grains and vegetables, those of the more northern latitudes were constrained to live chiefly by fishing and hunting. The agricultural occupations of

the former rendered it necessary to locate themselves within certain limits of territory, which they built upon and divided into extensive fields, while the latter, who supported themselves by fishing and the chase, were forced to lead a nomadic life, which allowed no time for improvement of any kind. Hence amongst the Southern Indians were found villages and towns, well built, and guarded around with walls. The inhabitants were somewhat experienced in the arts, and in the notions of government, law, and morality, and were somewhat advanced in civilization.

Narvaez, who attempted the conquest of Florida in 1528 with a well appointed army of four hundred foot and twenty horse, after gaining and sacking several fortified towns surrounded with extensive fields of corn, and well supplied with provisions, was so harassed by the savages, who continually lurked about the camp and killed many of the men and horses during the night, that he was compelled to abandon the enterprise.

It would be foreign to our present purpose to follow the army of De Soto, which, for four years, astonished and vanquished the natives in many bloody and desperate battles, through its wanderings in the present States of Florida, Georgia, Tennessee, Alabama, Mississippi, and Arkansas; but we shall confine our attention to those results of the expedition which throw light upon the condition and customs of the ancient inhabitants of the valley of the Mississippi. The tribes of Indians inhabiting the immense territory called by the Spaniards Florida, were worshippers of the sun, were governed by despotic princes, cultivated the soil, had made some advances in the arts; and their manners, customs, and religion pointed to an origin in common with those of the ancient inhabitants of Mexico. The population was much greater at the time of the invasion of De Soto than it has been at any subsequent period. Large armies were frequently arrayed against him. In Potosa, Florida, he was furnished with seven hundred burden bearers.

In Ocute, Georgia, he was supplied with two hundred of these Indian servants, and at Cafeque, in the same State, four thousand men are said to have transported the effects of his army. A numerous population was found in the province of Coosa, and large forces opposed him at Mubilia, Chickasa, and Alibamo.

The invasion of De Soto resulted in the destruction of a large Indian population in all the territory through which he passed; they were not only destroyed by thousands in the bloody battles, but they were worn out by heavy burdens, and hunted down by blood-hounds. The European diseases, such as smallpox, which the natives caught from the Spaniards, served also to thin out their ranks. Again, the constant bloody wars in which they were afterwards engaged amongst themselves, and which to a great extent grew out of the invasion, still further reduced their numbers.

At the time of the invasion of De Soto, the towns were surrounded with walls of earth, and had towers of defence; entrenchments and ditches were also found in various parts of the country. The most remarkable of the latter was at Pascha, west of the Mississippi. Here a ditch, "wide enough for two canoes to pass abreast without the paddles touching, surrounded a walled town. It was cut nine miles long, communicated with the Mississippi, supplied the natives with fish, and afforded them the privileges of navigation."

The natives formed artificial mounds for purposes of burial, worship, habitation, and defence. The houses of the chiefs, with but few exceptions, stood upon large and elevated artificial mounds.

When the Indians of that time (1540) resolved to build a town, the site was usually chosen upon low rich land, by the side of some stream, or in the neighborhood of a large never-failing spring, where they first erected a mound from twenty to fifty feet high, round on the sides, but flat on the top. The habitation of the chief and his family was erected upon the summit. At the foot of the eminence, a square was marked out, around which the principal men placed their houses, and around these the inferior classes erected their wigwams. Some of these mounds had stairways upon their sides, and were so steep as to be ascended only by these artificial means. They were thus rendered secure from the attacks of an Indian enemy.

Mounds were also erected over the chiefs after their death, whilst others were formed by the slow accumulation of the dead through long ages.

The aborigines, at the time of De Soto, worshipped the sun, and erected large temples, which were also receptacles for the bones of the dead.

They also entertained great veneration for the moon and certain stars. When the Indian ambassadors crossed the Savannah to meet De Soto, they made three profound bows towards the east, intended for the sun, three towards the west, for the moon, and three towards De Soto. Upon the eastern bank of the Mississippi, the Indians approached him without uttering a word, and went through the same ceremony, making to De Soto, however, three bows much less reverential than those made to the sun and moon. Similar customs prevailed on the west bank of this great river. In the morning every Indian presented himself at the entrance of his cabin, and extending his hand towards the sun, as his first ray beamed from the eastern horizon, he addressed a rude, but fervent hymn of adoration to his glory. At noon they performed a similar act in token of their gratitude; and to the setting sun they addressed their thanks for all the bounties they conceived he had bestowed upon them during the day; and they were particularly careful that his last ray should strike their heads. A remarkable temple was situated in the town of Talmaco, which is supposed to have been located on the Savannah River, three miles distant from Cutifachiqui, near Silver Bluff. It was more than one hundred feet in length, and fifty feet in width. The walls were high in proportion, and the roof steep, and covered with mats of split cane interwoven so compactly that they are said to have resembled the rush carpeting of the Moors. The roof was covered with shells of various kinds, arranged in an ingenious manner. On the inside, beautiful festoons of pearls, plumes, and shells extended along the sides, down to the floor. The temple was entered by three gates, guarded by gigantic wooden statues, some of which were armed with drawn bows and wooden pikes, and others with copper hatchets. On the sides of the walls were large benches, on which rested boxes containing the deceased chiefs and their families. Three rows of chests, full of valuable pearls, occupied the middle of the temple, which also abounded in garments manufactured out of the skins of various animals, and in beautiful mantles of feathers.

Upon the route through Alabama and the neighboring States, De Soto found the temples to be the receptacles of bones of the chiefs, or suns, and of their families.

The large towns contained stone houses filled with rich and comfortable clothing, such as mantles of hemp, and feathers of every color exquisitely arranged. The dress of the men consisted of a mantle of the size of the common blankets, made of the bark of various trees, and a species of flax interwoven and dyed of various colors, also of well dressed and painted skins, and garments woven with beautiful feathers. The mantle was thrown over the shoulders, but the arms were exposed. Great men were sometimes borne upon litters by their subjects, after the manner of the Mexicans, whilst their heads were shielded from the sun by shades made of feathers or gaudily painted hides.

It is also recorded, that one of their most populous and powerful nations had been nearly destroyed by a severe and destructive pestilence, several years before the invasion of De Soto.

Champlain, in his explorations of the coast of Maine in 1605, found a populous agricultural race, whose neat covered lodges were in many places thickly strewn along the shores. Shortly after his visit, the nations of New England were swept off by a fatal pestilence, and when the Puritans, fifteen years afterwards, made their settlement at Plymouth, they found a comparatively small aboriginal population.

The art of forming entrenchments, stockades, and barricades was practised by the Iroquois, in their encounters with Champlain and his followers; and this remarkable people are known to have cultivated large fields of Indian corn everywhere throughout their fertile country, from time immemorial.

The Natchez Indians erected mounds and temples, worshipped the sun, obeyed despotic rulers, and practised the bloody rites of human sacrifice, up to the time of their great massacre by the French.

It is evident that various nations in the Mississippi Valley were populous, cultivated the soil, and erected mounds and earthworks as late as the invasion and explorations of De Soto.

Aboriginal Remains in Maury County, Tennessee.

Twenty-one miles southwest of Franklin, in Maury County, Tennessee, is a mound known as Parish's Mound. It is situated in a bend of Rutherford's Creek, not far below its junction with Carter's Creek, and two and a half miles above the junction of Rutherford's Creek with Duck River. This mound is 25 feet in height, 609 feet in circumference, and 152 feet in diameter on the summit. It is a beautiful square mound, covered with a thick growth of small cane. Near this large mound are two smaller ones, distant respectively three hundred and one hundred and seventy-five feet; the one northeast and the other southwest. They are situated upon a hill which terminates in a steep bluff on the creek. Near the mounds are fine springs and running streams. No traces of fortifications or of stone graves are visible at this day, in and around them. The position of these mounds in connection with the steep bluff of the creek, offers, however, most favorable advantages for defence. Rutherford's Creek is a narrow and deep stream; and there are mounds at various points above these remains.

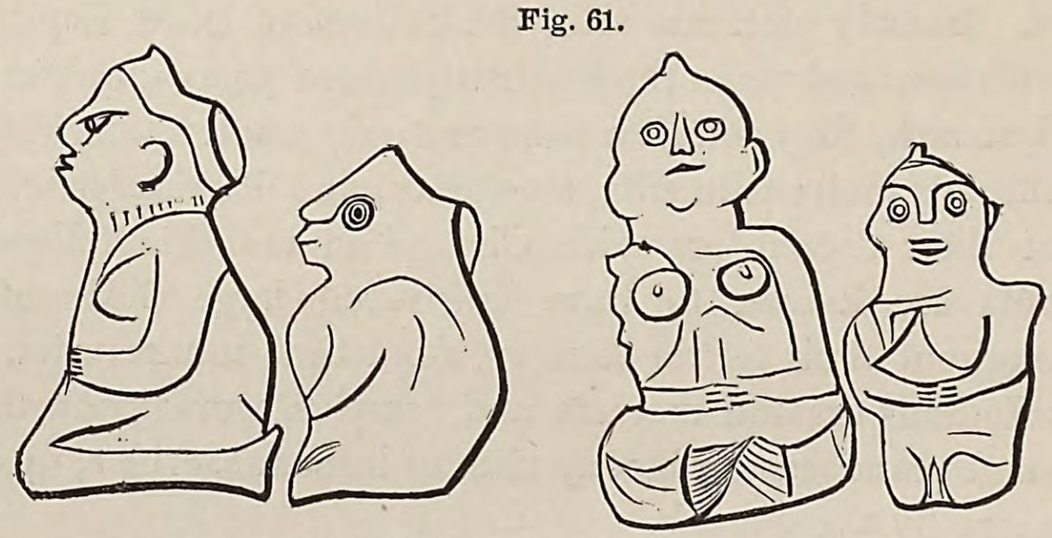
Aboriginal Remains near Pulaski, Giles County, Tennessee.

In company with my friend, Dr. J. T. Grant, of Pulaski, Tennessee, I explored a cave near this place, which was said to have contained formerly aboriginal remains, but without any results of interest.

Dr. Grant exhumed from a small rock mound near Pulaski the relics described below.

The images, the outlines of which are given in Fig. 61, apparently represent a male and a female. The largest, or female image, has a bold, elevated forehead, prominent nose, and open mouth, as if engaged in speech. It is 7.2 inches in height. The smaller, male image, has a retreating forehead of the Aztec cast, resembling one of the Flat-head Indians in whom this change in the cranium has been induced by artificial pressure. The mouth is drawn to a point and closed. The specimen is 5.6 inches in height. Both images are in the kneeling posture. In the following figure they are represented both in the full face and in profile.

Fig. 61.



Images from Rock Mound, near Pulaski, Tennessee.

The material of these specimens is crushed shells and red clay, and has evidently been vitrified by intense heat. They bear evidence of having been painted red, and striped in right lines with black paint. They are hollow within, and have circular openings in the back of the head.

The difference in the shape of the heads of these two objects from the same burial mound is interesting, as indicating that this custom of applying artificial pressure to the head was not universal, but appears to have been most generally practised with the males.

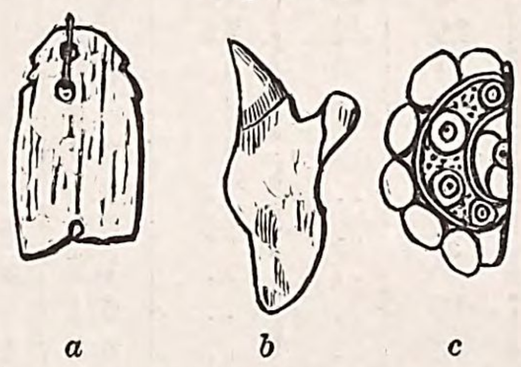
In Fig. 62 (*a*), is represented an implement or ornament, the lower portion of which has been broken off, which was taken from this mound. Length 3.5 inches, breadth 2 inches. This object is formed of greenstone, with two notches on each side, and three holes through the body. Marks of the abrasion occasioned by a string or thong are evident in the two upper holes. The use of this singular stone is unknown. Perhaps it was worn as an ornament about the neck. The figure marked (*c*) represents a fragment of a beautiful shell ornament with concentric circles engraved on its concave surface. The diameter is 3.5 inches. Two holes have been bored through the shell, half an inch apart, through which a cord or thong was probably passed, and by which the ornament was suspended.

As we have seen, a similar ornament was taken from the breast-bone of a skeleton in the burial mound on the banks of the Cumberland River, opposite Nashville; and we have obtained a number of them from other aboriginal stone graves in Tennessee. We have observed the same kinds of hollow images and shell ornaments from localities widely separated. These facts are important as indicating that, although the mode of burial was somewhat different, these relics, as well as the accompanying skull, belonged to the aboriginal stone-grave race of Tennessee.

In Fig. 62, (*b*) represents a fragment of the jaw-bone and the massive tusk of some large carnivorous animal, most probably the American bear. Length 3.7 inches, length of the tooth exposed 1.5 inches, total length 3 inches.

A skull, the bones of which were very hard as if they had been undergoing petrifaction, was exhumed from the same mound together with the preceding relics. A portion of this human skull, on the right side, including fragments of the temporal and occipital bones, had been destroyed apparently before its deposit in the rock mound. It is depressed and retreating in the frontal region, resembling, in a measure, the crania which have been artificially flattened in infancy by placing a weight on the forehead. The general outlines of this skull may be gathered from the following measurements: facial angle 74°; longitudinal diameter 6.5 inches; parietal diameter 5.8 inches; frontal diameter 4.3 inches; intermastoid arch 15 inches; horizontal periphery 19.2 inches.

Fig. 62.



a. Stone implement. *c*. Shell ornament. *b*. Fragment of jaw and tooth, from a small rock mound, near Pulaski, Giles Co., Tennessee.

The existence of two types in the heads of the images and in the crania is considered of great interest, apparently indicating that the stone grave race came in contact with some other race, and mingled with it.

The different forms of crania from the stone graves and mounds of Tennessee, may be gathered from the following measurements, which I made with carefully constructed and standard instruments.

Number of the cranium.	Facial angle, degrees.	Internal capacity in cubic inches.	Longitudinal diameter, inches.	Parietal diameter, inches.	Frontal diameter, inches.	Vertical diameter, inches.	Intermastoid arch, inches.	Intermastoid line, inches.	Occipito-frontal arch, inches.	Horizontal periphery, inches.	Diameter of head and face, inches.	Zygomatic diameter, inches.	No. of the skull as examined in stone graves & mounds.
1	76.5	75	6.3	5.4	4.3	5.5	15	5	13.5	19	7.5	5.1	10
2	80	78	6	5.6	4.4	5.4	14.6	5.1	13.2	18.9	7.2	5.2	14
3	75	78	6.1	5.7	4.3	5.6	15	5.2	13	19	7.3	5.3	17
4	..	82	6.2	5.7	4.1	5.5	15.2	5.4	14	19	..	5.2	19
5	77	84	6.5	5.8	4.4	5.8	15.5	5.2	14.3	19.9	7.4	5.3	25
6	76	68	6.4	4.9	3.9	5.5	13.9	4.5	13.8	18.2	7.1	4.6	30
7	81	103	7	5.9	4.8	6.4	16.8	5.3	15.7	20.8	7.8	5.5	31
8	80	80	6.6	5.6	4.3	5.5	15	4.6	13.8	19.3	7.2	5.2	40
9	78	79	7	5.2	3.9	5.8	14.7	4.6	15.2	19.5	7.4	5	41
10	81	76	6.3	6	4.4	5.4	15.7	4.6	13.8	19.4	6.8	5.3	42
11	80	90	6.9	5.6	4.3	6	15.7	4.8	14.8	20.3	7.6	5.5	48
12	77	80	6.8	5.2	4.1	5.8	15	4.7	14.4	19.5	7.8	5.2	55
13	82	81	6.9	5.5	4.3	5.7	15	4.8	14	19.6	7.8	5	58
14	..	92	6.1	6.4	4.4	6	16.5	5.4	13.8	19.8	..	..	60
15	..	79	6.1	5.8	4.6	5.5	15	4.8	13.4	18.9	..	..	64
16	..	..	7.2	5.7	4.6	5.9	16	4.6	15.2	20.8	..	..	67
17	..	..	6.1	5.5	4.1	4.5	14	..	13.6	19	..	..	72
18	..	..	6.5	5.8	4.5	4.6	15	..	....	19.4	..	..	80
19	82	79.2	6.7	5.5	4.2	5.5	15	4.4	13.5	19.1	7.8	5.2	85
20	75	81.4	6.5	5.7	4	5.6	14.4	5	13.3	19.2	7.1	5.3	94
21	82	80.5	6.4	5.9	4.6	5.7	15	4.9	14	19	7.3	5.4	106
Max.	82	103	7.2	6.4	4.8	6.4	16.8	5.4	15.7	20.8	7.8	5.5	
Min.	75	68	6	4.9	3.9	4.5	13.9	4.4	13	18.2	6.8	4.6	
Mean,	78.8	81.44	6.5	5.68	4.21	5.56	15.0	4.57	13.88	19.8	7.4	5.2	

In the preceding table, skull No. 1 was from a stone grave in a mound on the banks of the Cumberland River. The oval of the skull was unusually perfect; the nose high and arched; the teeth sound, 16 above and 16 below, but worn by use; occiput less flattened than usual. Nevertheless this characteristic is readily observed when the skull is viewed vertically, or at the base; the flattening greatest on the left side.

No. 2, from the same burial mound as No. 1, presents a square pyramidal form; occiput greatly flattened; the result of artificial pressure during early life; cranium similar to that of the Natchez.

No. 3, from the same locality, has a full set of perfect teeth. The flattening is greatest on the left side.

No. 4, from the same locality as the preceding, has the occiput greatly and uniformly flattened; parietal diameter nearly equal to the longitudinal.

No. 5 is from a stone grave at Old Town, banks of Big Harpeth. The occipital bone shows the effects of pressure, which is much more marked on the left side; the right parietal protuberance is much fuller and thrown further back than the left; Wormian bones in the occipital suture.

No. 6 is from a stone grave at Old Town. The occiput is but slightly flattened; the skull quite symmetrical in outline; forehead narrow.

No. 7 is from a stone grave in a mound in the valley of the Cumberland, opposite

Nashville. It is a large, well-formed, massive cranium; skeleton over six feet in length. Whilst the occiput is somewhat flattened, the shape is more symmetrical, and the oval of the head more perfect, than in the majority of crania from the stone graves.

No. 8 is from a stone grave in a burial mound on the Big Harpeth. The nose is arched and prominent; the occiput flattened on the left side; the foramen magnum situated nearer to the left side of the base of the cranium.

No. 9 is from a stone grave at the residence of Col. Overton. Occiput but slightly flattened; it is also divided into two distinct portions by a well-defined suture, running directly across from the inferior angles of the parietal bones.

No. 10 is from a stone grave in a burial mound opposite Nashville. Flattening of the occiput, well marked; general form of the calvarium compact and square, with increase of parietal and vertical diameters, as the effect of occipital pressure.

No. 11 is from a stone grave in Cumberland Valley. A well-formed cranium; occiput flattened more on the left side; this has caused a greater prominence of the bones of the forehead and face on the left side, whilst the parietal protuberance is more marked and situated further back on the right side.

No. 12 is from a stone grave on the banks of Harpeth, near Franklin. The application of pressure during childhood, or, rather immediately after birth, has destroyed the symmetry of the entire cranium, altering the position of the foramen magnum, throwing the articulations of the lower maxilla out of a right line, and thus rendering one side of the face more prominent than the other. Even the symmetry of the lower jaw is destroyed, each ramus having a different angle and a different length.

No. 13 is from a stone grave on Harpeth River.

No. 14 is from a stone grave on the banks of the Cumberland River. During its plastic condition in infancy this skull was evidently subjected to considerable pressure, which appears to have been exerted both upon the occipital and frontal bones.

No. 15 is from Old Town. The effects of pressure are well marked; the longitudinal and parietal diameters very nearly equal.

No. 16 is from Old Town. A large cranium; occiput but slightly compressed; marks of pressure more evident in the superior portion of the occiput and inferior angle of the parietal bones.

No. 17 is from Old Town. The parietal diameter is increased and the longitudinal diminished by apparent flattening.

No. 18 is from Harpeth River, near Franklin; occiput flattened.

No. 19 is from a stone grave on Harpeth River near Franklin; superciliary ridge prominent; occiput more flattened on the right side.

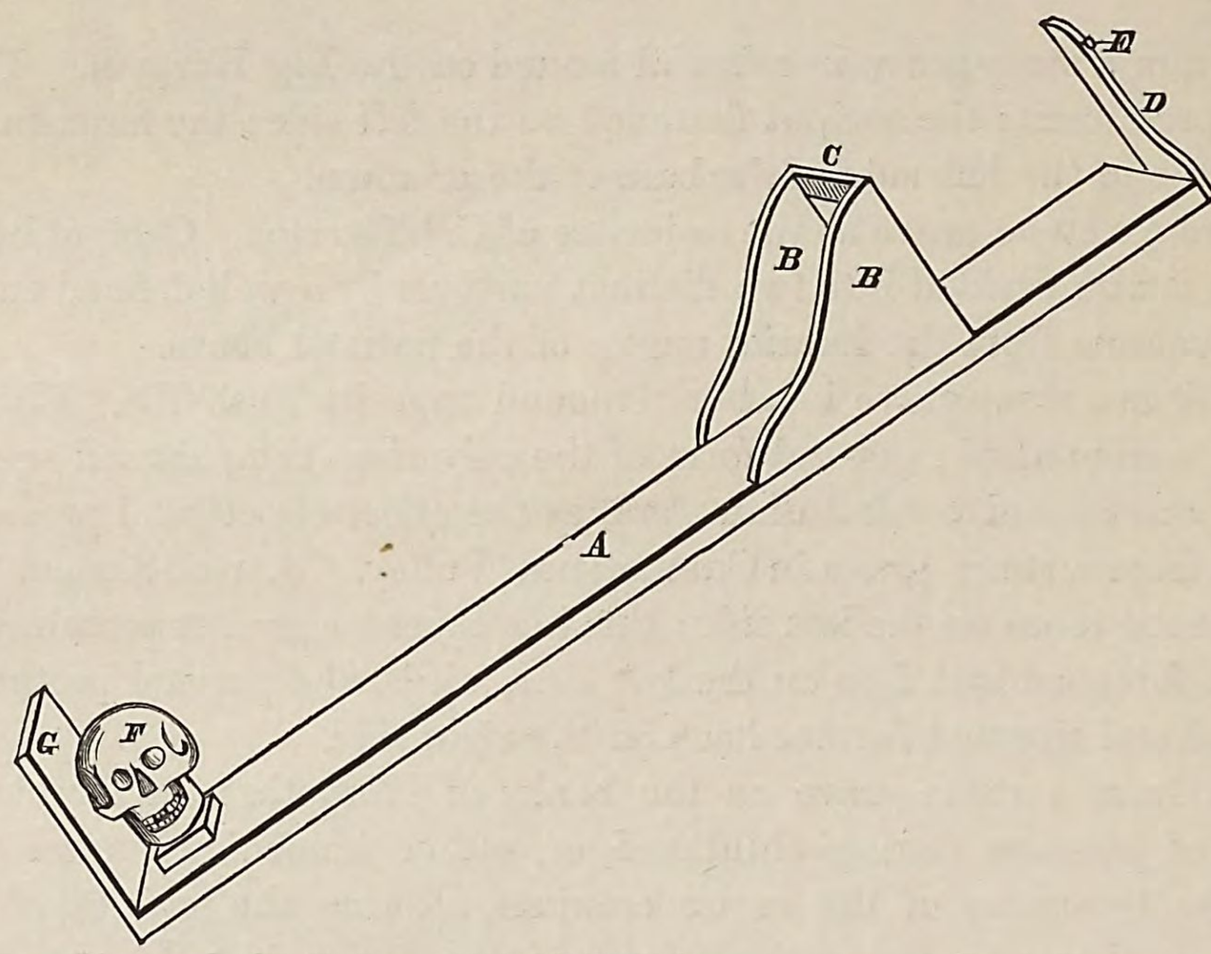
No. 20 is from a stone grave near Franklin. Cranium well formed; occiput but slightly flattened, compression greatest on the left side.

No. 21 is from a stone grave near Franklin. It is a square pyramidal skull with prominent superciliary ridge and high nasal bones. Occiput and inferior portions of the parietal bones flattened.

The outlines of the crania were obtained and compared by means of the cranio-

scope described by Dr. Morton in his "Crania Americana," and represented in Figure 63.

Fig. 63.



Craniograph.

The method of measurement was the same as that employed by Dr. Morton, whose "Crania Americana" continues to be the greatest repository of facts relating to the crania of the indigenous races of North and South America.

The following table presents the mean results of Dr. Morton's anatomical measurements.

	Toltecan nation, including skulls from the mounds.		Barbarous nations with skulls from the valley of Ohio.		American race, embracing Toltecan and barbarous nations.		Flat-head tribes of Columbia River.		Ancient Peruvians.	
	Number of skulls.	Mean.	Number of skulls.	Mean.	Number of skulls.	Mean.	Number of skulls.	Mean.	Number of skulls.	Mean.
Longitudinal diameter	57	6.5	90	7	147	6.75	8	6.7	3	6.8
Parietal diameter	57	5.6	90	5.5	147	5.55	8	6	3	5
Frontal diameter	57	4.4	90	4.3	147	4.35	8	4.9	3	4.2
Vertical diameter	57	5.3	90	5.4	147	5.35	8	4.8	3	4.8
Intermastoid arch	57	14.9	90	14.6	147	14.75	8	14.6	3	13.3
Intermastoid line	57	4.1	90	4.2	147	4.15	8	4.1	3	4
Occipito-frontal arch	57	13.6	90	14.2	147	13.9	8	13.1	3	14.3
Horizontal periphery	57	19.4	90	19.9	147	19.65	8	20	3	18.8
Length of head and face	53	7.8	78	8.1	131	7.45	8	8.3	3	8.4
Zygomatic diameter	49	5.3	64	5.3	113	5.3	8	5.7	3	5.1
Facial angle	55	75° 35′	83	76° 13′	138	75° 45′	8	69° 30′	3	67° 20′
Internal capacity in cubic inches	57	76.8	87	82.4	144	79.6	8	79.25	3	73.2
Capacity of anterior chamber	46	32.5[1]	73	34.5	119	33.5	8	32.25	3	25.7
Capacity of posterior chamber	46	43.8[1]	73	48.6	119	46.2	8	47	3	47.4
Capacity of coronal region	46	14[1]	71	16.2	117	15.1	8	11.9	3	14.6
Capacity of sub-coronal region	46	61.8[1]	71	66.5	117	64.5	8	67.35	3	58.6
The total capacity being estimated at 100, gives the following proportional results, as parts of 100. — Anterior chamber,	..	42.6	..	41.5	..	42.1	..	40.63	..	35.1
Posterior chamber,	..	57.4	..	58.5	..	60	..	59.37	..	64.9
Coronal region,	..	18.47	..	19.6	..	19	..	15	..	20
Sub-coronal region,	..	81.53	..	80.4	..	81	..	85	..	80

In his comments on the foregoing scale of results, Dr. Morton calls attention to the curious fact that the barbarous nations possess a brain larger by five and a half cubic inches than the Toltecans, while, on the other hand, the Toltecans possess a greater relative capacity of the anterior chamber of the skull.

Dr. Morton concludes, from his extended investigations, that the American race differs essentially from all others, not excepting the Mongolian; that the American nations, excepting the polar tribes, are of one race or species, but of two great families which resemble each other in physical, but differ in intellectual characters; that the cranial remains discovered in the mounds, from Peru to Wisconsin, belong to the same race, and probably to the Toltecan family.

A careful comparison of the cranial measurements of the Tennessee race with those obtained by Dr. Morton, establishes the fact that the former exceed the Toltecans in the internal capacity of the skull, in the proportion of 81.44 to 76.8; the facial angle also is greater in the proportion of 78.8 to 75.35. The largest skull in the Tennessee race exceeded in size, and in the capacity of the brain, the largest American, Ethiopian, Malay, and Mongolian skulls examined

[1] The seeming discrepancy in the sums of these two series of measurements arises from the fact that only 46 of the 48 skulls measured entered into each series.

by Dr. Morton, and approached more nearly to the largest Caucasian skull. The truth of this statement will be rendered evident by a comparison of the preceding table of cranial measurements of the Tennessee skulls, with the following measurements of the internal capacity of the cranium in the different races by Dr. Morton:—

Races.	Number of skulls.	Mean internal capacity in cubic inches.	Largest in the series.	Smallest in the series.
Caucasian	52	87	109	75
Mongolian	10	83	93	69
Malay	18	81	89	64
American	147	82	100	60
Ethiopian	29	78	94	65

The internal capacity of the largest cranium of the Tennessee race was 103 cubic inches; of the American, as measured by Dr. Morton, 100; of the Ethiopian, 94; of the Malay, 89; of the Mongolian, 93; and of the Caucasian, 109.

The subsequent investigations of Dr. Morton, as enlarged by the measurements of Dr. J. Aitken Meigs of Philadelphia, resulted in the increase of the mean cranial capacity of the Teutonic family by 1.5 cubic inches; of the Mongolian by 5 cubic inches; of the American by 13 cubic inches; and in slightly diminishing that of the Negro group.

A careful comparison of the cranial measurements of the stone-grave and mound-building race of Tennessee, with those recorded by Dr. Morton and Dr. Meigs, from a collection of 490 crania and 13 casts, leads to the conclusion that the skulls of the former race possess, in a marked degree, those characteristics which distinguish the American race.

The entire series of crania from the stone graves and mounds of Tennessee is characterized by the square form, and the more or less flatness of the occipital portion. The want of symmetry in many of them is due, without doubt, to the unequal manner in which the pressure was exerted during infancy. When viewed from behind, the stone-grave skull presents a conical or wedge-shaped outline, the base being wide at the occipital protuberances, and at the opening of the ears, from thence to the parietal protuberances it is almost perpendicular, and sloping from the parietal protuberances to the vertex. When the skull is laid on the side and viewed in outline, the base presents a massive, compressed appearance, the most prominent features being the short antero-posterior diameter and the comparatively long transverse diameter. This peculiarity also appears to be the result of artificial pressure rather than of original configuration. Owing to the effects of pressure, in many skulls the foramen magnum does not occupy a strictly symmetrical position in the base of the skull, being apparently thrown further back, and often more to one side. From the same cause it happens, that the glenoid fossæ are not symmetrical, one being frequently in advance of a line drawn at right angles to the antero-posterior diameter of the base of the skull. We have sometimes observed that this deformation was attended with a corresponding alteration in the lower jaw.

All the crania which I examined from the stone graves and mounds of Tennessee were characterized by the great comparative width of the parietal diameter, and the corresponding shortness of the longitudinal diameter. This peculiarity in like manner should be referred to the effects of artificial pressure, rather than to original conformation.

The foreheads, although low and retreating, are in some cases broad. The superior margin of the bony orbits is but slightly curved, whilst the lower margin is curved to a marked degree, thus presenting a striking contrast to the oblong orbit of the Malay skull. The nasal bones are well developed and prominent, with large nasal cavities, in striking contrast with the nose in the Negro race. The cheek bones are large and prominent, giving an angular configuration to the face. The upper jaw is elongated and inclined outwards, but the teeth are vertical. The lower jaw is truncated in front, massive, powerful, and broad. The teeth are large, and in most cases perfect. In the crania of those somewhat advanced in years, the teeth were generally much worn, and in some cases abraded almost to the sockets. It was evident from the examination of more than one hundred crania, that the effects of pressure manifested in the flattening of the occiput, in the shortening of the longitudinal diameter, and in the increase of the parietal diameter, varied within wide limits; and that, whilst some of the crania might be referred to the brachycephali of Retzius, some, in which the effects of artificial compression were but slightly marked, should be referred to the dolichocephali. Others evidently occupy a medium position between the two. Notwithstanding that the crania differ within certain limits as to the prominence of the superior maxilla, they should be classed with the prognathous, rather than with the orthognathous races. Whilst some of the dolichocephalic forms of these crania approach the Negro type in the projecting cheek bones and protruded upper jaw, the brachycephalic and intermediate forms, on the other hand, approach more nearly the Mongol type.

The pyramidal form of the crania, as well as the shape of the occiput, and the effects of pressure in altering the normal position of the sutures, is clearly seen when a comparison of their outlines viewed from behind is instituted. Such comparisons also show the cuboidal shape, the great width of the occipital protuberances, the perpendicular wall up to the parietal protuberances, and the comparatively flat vertex. The occiput is flattened in different degrees, and presents different forms, in consequence of the different amount of pressure to which it was subjected during infancy; and it is evident that the position of the coronal suture is altered, and the cranium rendered asymmetrical in proportion to the greater or less force applied during early life upon the one side or the other. The vertically flattened occiput is by no means characteristic of the entire series of crania of the stone-grave race; and I have been led to regard this peculiarity, not as a typical characteristic dependent on the specific differences of race, but as preëminently, if not entirely, the result of artificial modification during infancy. Not only do these crania manifest the different degrees to which the head of the child was compressed in its small, confined cradle, but they also exhibit in the greater flattening on one side or the other, and in the consequent

want of symmetry throughout the entire cranium, the different lines along which the compressing force was exerted. When these crania are laid on the occipital bone, they rest stably as upon a broad flat base. If the flattening has been greater on one side than on the other, the cranium will turn from the perpendicular and rest upon the flat portion of the occiput. The increase in the number of Wormian bones along the occipito-parietal sutures does not appear to be the result of pressure, because these are more numerous and larger in crania which exhibit little or no effect from pressure. The frequent occurrence of these intercalated bones appears to characterize the crania of the stone-grave race of Tennessee as well as those of the Inca Peruvians.

In one of the crania of the stone-grave race, in which the flattening of the occiput was so great as to render the parietal diameter greater by four-tenths of an inch than the longitudinal diameter, the pressure was greater upon the right side of the head, giving the cranium a deformed and one-sided shape, in addition to the great contraction of the antero-posterior diameter, and the marked increase of the lateral or parietal diameter. Thus the antero-posterior diameter of the right side of the skull, measured from a point just above the superciliary ridge to a point directly across on the occiput, is 4.7 inches, and on the left side 5.4 inches. In another cranium, the left portion of the occipital bone, near its junction with the left parietal bone, being decidedly flattened, as well as the inferior posterior angle of the left parietal bone, the right parietal prominence was more marked, and thrown further back than the left, which had been pushed forwards, as it were, by the effects of pressure. In still another cranium (which we select merely as a representative example of the effects of pressure upon the shape of the entire skull, and even upon the face and lower maxilla), the back of the skull is more flattened upon the left side than upon the right. This is attended by a greater prominence of the left side of the forehead, while the parietal protuberance is more marked, and situated further back on the right side. In fact, as we have endeavored to demonstrate by actual examples, the effect of this unequal pressure during infancy is to destroy the symmetry of the entire cranium; to alter the position of the foramen magnum, and the form and position of the atlas and superior cervical vertebræ; to throw the articulations of the lower maxilla with the cranium out of a right line; and thus to render one side of the face more prominent than the other. Even the symmetry of the lower jaw is destroyed by this pressure, each ramus having a different angle and a different length.

Daubenton more than a century ago called attention to the fact, that the foramen magnum is situated further back in apes than in man; and Sœmmering asserted that such is the case with the Negro as compared with white races. But Prichard, after an examination of "many negro skulls," disproved the statement of Sœmmering, which had been repeated by many writers, and demonstrated that the foramen in the negro skull corresponds in position with that of the white races, viz.: exactly behind the middle of the antero-posterior diameter of the basis cranii. Professor Jeffries Wyman,[1] in some recent determinations of the position of the foramen magnum with

[1] Observations on Crania, etc., Boston, 1868, pp. 11–14.

reference to the cranium (this position being indicated by the ratio of the distance comprised between two plumb lines, one dropping through the foramen and touching the anterior border, and the other touching the most prominent part of the occiput, to the long diameter of the cranium proper, taken as 100), arrived at the following results: While there is an actual difference in the position of the foramen magnum in the races compared, it is quite small when compared with the difference between the human species and the apes. Contrary to Sœmmering's assertion, the negro does not make the nearest approach to the latter; on the other hand, although the negro cranium does not precisely agree with that of the white race, as stated by Pritchard, it very nearly approaches it, and it is the North American Indian which has the largest index.

The position of the foramen magnum is very different in the young and in the adult apes; the former approaching much nearer to the human race than the latter. Professor Wyman has pointed out other striking resemblances between the cranium of the young Gorilla and that of the adult man, which are much diminished as age advances.

I have carefully examined the position of the foramen magnum in the crania of the stone-grave and mound-building race of Tennessee, and have arrived at results similar to those first recorded by Daubenton,[1] Prichard,[2] and Wyman, namely: that these crania have a lower index of the foramen magnum than those of the other races.

I have, however, after comparative examinations of crania variously altered by artificial compression, arrived at the conclusion that this peculiarity of the crania of the stone-grave race is, in great measure if not wholly, due to the effects of artificial pressure in flattening the occiput. Any flattening of the occiput would necessarily render the distance from its comparatively perpendicular wall to the anterior border less than in crania presenting the normal convex surface of the occiput. It appears to be evident, however, that such alteration of the index of the foramen magnum as is induced by artificial flattening of the occiput during childhood would not necessarily alter the position of the spinal cord relatively to the mass of the brain; since what is lost in length is gained in the height of the cranium, as is evident by the cranial measurements.

It is but reasonable to suppose that the index of the foramen magnum would be less in all those American tribes which still adhere to the practice of binding the child in its small cradle, with the head resting for months in the same position, upon the occiput, and pressed against a hard surface. I have observed the effects of pressure in flattening the occiput, in white infants who, during protracted illness, have lain long in one position.

This fact, therefore, as far as my observations extend, simply illustrates the effects of pressure in altering the relative position of the foramen magnum, in the stone-grave crania of Tennessee, and should not be cited as a peculiarity of this race.

---

[1] Sur la Difference du Grand Trou Occipital dans l'Homme et dans les autres Animaux. Mémoires de l'Acad. des Sciences, 1764.

[2] Researches into the Physical History of Man, 1851, vol. i, p. 285.

We propose to examine in the next place, whether the peculiar form of the crania from the stone graves throws any light on the origin or tribal relations of this extinct race.

This singular custom of flattening the head by artificial means, when the bones are young and in a plastic state, was not confined to the inhabitants of America, but is of great antiquity. Thus Hippocrates, in his treatise on "Air, Water, and Situation," mentions the *Macrocephali* amongst those people who were remarkable for the length of their heads, in which respect they differed from all other races. Hippocrates gives the following account of the mode in which the peculiar shape of the head was produced, and advances the theory that, after the similar configuration of the skull was produced, the peculiarity was propagated, and that it was thenceforth unnecessary to resort to artificial pressure. "At first the length of their heads was owing to a *law or custom;* it being an opinion among them, that those who have the longest heads are the most noble. The custom stood thus: as soon as the child was born, they immediately fashioned its soft and tender head with their hands, and, by the use of bandages and proper arts, forced it to grow lengthwise; by which the spherical figure of the head was prevented and the length increased. This at first was the effect of custom, to make nature operate in this way. In process of time, it became so far natural as to make the custom useless." The exact situation of the Macrocephali has not been determined, but it is supposed to have been not far from the Palus Mæotis, in the vicinity of the Caucasus.

According to Dr. Rathke, certain tumuli having been excavated at Kertsch in the Crimea, there were found in them, besides different utensils and statues, several skeletons; and it is most remarkable that the form of the head was greatly elongated, in the manner described by Hippocrates. With regard to the Macrocephali, Pliny, in the fourth chapter of the seventh book of his Natural History, mentions the Macrocephali in connection with nations dwelling upon the coast of Asia Minor; and Strabo, alluding to these people (Book I, Chap. ii, § 35, and Book XI, Chap. xi, § 7), locates them about Mount Caucasus, and describes them as practising Persian customs. I have failed, after a careful search, to discover any description of these people in the works of Herodotus.

In this connection it is also worthy of consideration, that numerous mounds, or barrows of earth, and sun-dried bricks, resembling, in many respects, similar structures in North America, are found in the plains and valleys of Western and Northwestern Europe, and in Central and Northern Asia. According to the testimony of Arminius Vámbéry, the Turcomans of the present day erect mounds over their distinguished men, at the time of burial, accompanied with ceremonies resembling, in some respects, those practised by the North American Indians. This custom existed among the Ancient Huns, and is in use in Hungary, even in our own time. Vámbéry, in his "Travels in Central Asia," also describes other great mounds of evident antiquity, the origin and uses of which are unknown to the natives; and Atkinson, in his "Narrative of Seven Years' Explorations in Siberia, Mongolia, and Chinese Tartary," has in like manner described the barrows of Chinese Tartary, one of which was one hundred and fifty feet in height, and steep, and regular in its form. According to the latter author, among the numerous tumuli scattered

over the steppe, built at different periods and by different races, the greater ones are the most ancient. One of these, composed of stone, and domelike in form, is three hundred and sixty-four feet in diameter and thirty-three feet high. This mausoleum must bear some resemblance to the large mound near the Stone Fort of Tennessee.

The archæologist will, without doubt, find the richest materials in these ancient mounds for the establishment of the cranial characteristics, and of the nature and perfection of the arts, of the former inhabitants of Europe and Asia. The question as to the origin and identity of the races of mankind should rest upon the results of such explorations, as well as upon the differences existing at the present day. The characteristics of the crania and works of art of these ancient mounds, and more especially of those along the northern borders of Asia, are of the greatest importance in the light which they may shed upon the migrations of tribes and nations, and the peopling of America.

The custom of artificially compressing the cranium appears to have been practised on the American continent, more especially by those nations which belonged to the Toltecan stock; and a comparison of the crania of the stone-grave race and mound-builders of Tennessee, with those of the *Inca* Peruvians and ancient Mexicans, establishes a very close relationship. The crania of the stone-grave race of Tennessee present marked contrasts with those of the ancient Peruvians, more especially in differences of form occasioned by artificial pressure. On the other hand, they possess certain striking peculiarities in common with the crania of the Inca Peruvians.

The researches of Dr. Morton have established the fact that the skull of these people is remarkable for its quadrangular form; the occiput is greatly depressed, or compressed, sometimes absolutely vertical; the sides are swelled out, and the forehead is sometimes elevated, but very retreating. The skulls of the Inca Peruvians, like those of the stone graves and mounds of Tennessee, are remarkable for their irregularity. In the whole series in the possession of Dr. Morton, there was but one that could be called symmetrical. This irregularity, in both series of crania, consists in the greater projection of the occiput to one side, showing, in some instances, a surprising degree of deformity.

Cieca, Torquemada, Garcilasso de la Vega, and others of the early writers upon America, have recorded the fact that the custom of distorting the skull by mechanical means in infancy was common in many provinces of Peru, at the period of the Spanish invasion. They have also shown that it was not introduced by the Incas, but was in use before they conquered the country, and that it was resorted to for the purpose of increasing the ferocity of the countenance in war, of augmenting an imaginary grace, and of adding to the health and strength of the body.

It is also obvious that there were two principal modes of effecting this end, and that they were very different.

The view advanced by Dr. Morton and others, that the Incas, or later Peruvians, who conquered the more ancient inhabitants, altered their customs and laws, and imposed a new language and a new religion, were the Toltecs, the most civilized nation of ancient Mexico, which, after governing that country for four

centuries, suddenly abandoned it about the year 1050 of our era, is of interest in this discussion, in that it furnishes a plausible explanation of the similarity between the crania of the Tennessee stone-grave and mound-building race and those of the Inca-Peruvians of South America. This supposition will be still further strengthened by the establishment of similarities with the ancient Mexicans. The form and expression of the Toltecan face, and the characteristics of their skulls, gathered from the terra-cotta heads found in the Toltecan ruins of Anahuac, and in the ruins of the temples of the Sun and Moon at Teotihuacan, and from the bas-reliefs of Palenque and other ancient Mexican cities, present a striking resemblance in size and configuration to the heads of the Peruvians. They are all very much compressed from back to front, having high and broad foreheads, oval faces, and prominent cheek-bones.

The Toltecan crania, figured by Dr. Morton (Plates XVI, XVII, XVII A, XVIII, LIX, LX, LXI), both in their outlines and in their measurements resemble closely those of the stone-grave and mound race of Tennessee. We observe the same want of symmetry, the same great width between the parietal bones, marked flattening of the occiput, and the same broad and ponderous jaws.

Most historians date the invasion of Mexico by the Toltecs, whose original seat is stated in their traditions to have been to the northwest of Mexico, in a country called Huehuetapallan, about the year 600 of the Christian era. The Toltecs, the most refined in their social relations, and most skilful in their arts and sciences of all the nations of Anahuac, introduced the cultivation of Indian corn and cotton, made roads, lived in towns and cities, and erected the most imposing monuments in the New World. During the reign of their last prince, about the beginning of the eleventh century, their prosperity and power were destroyed by a series of calamities. The rain denied them the necessary showers to their fields; the earth refused the fruits that supported them; and the air was infected with a mortal contagion which filled the graves with dead and carried consternation to the minds of the survivors. The remnant of this great nation sought relief from famine, sickness, and death, in other countries, and, about the year 1031, emigrated in large bodies to various parts of the continent, and extended themselves as far south as Yucatan.

According to the historian who records these events, the land of Anahuac remained solitary and depopulated for nearly one century. When the Aztecs took possession of Anahuac, in the 12th century, they found the gigantic pyramids of Cholula, Teotihuacan, and Papantle already existing, and referred them to the Toltecs.

As the Toltecs were not the original inhabitants of Mexico, and if it be granted that the similarity between their earthen pyramids, stone idols, warlike implements, drinking and cooking vessels, and crania, with those of the aborigines of Tennessee establishes a common origin; it may be a subject of inquiry, whether the aborigines of Tennessee came from Mexico, or were a remnant of the original stock which invaded Mexico in 600 A. D.

In the consideration of this question, the religious customs, laws, and history of the Natchez Indians, whose crania bear a striking resemblance to those of the

stone-grave race of Tennessee on the one hand, and to the Toltecs and Peruvian Incas on the other, should be considered. Fortunately the history of the Natchez has been preserved, and they form, as it were, a connecting link with the Toltecs of the past.

The Natchez cranium figured by Dr. Morton (Plates XX and XXI, p. 160–162, Crania Americana) resembles, in its flattened occiput, short antero-posterior diameter, great parietal diameter, and high crown, many of the Tennessee crania.

The Natchez practised the custom of distorting the head by compression, in the following manner, as described by Du Pratz.[1]

"When one of the women of the natives is delivered, she goes immediately to the water and washes herself and the infant; she then comes home and lies down, after having disposed her infant in the cradle, which is about two feet and a half long, nine inches broad, and a half foot deep, being formed of straight pieces of cane bent up at one end to serve for the foot or stay. Between the canes and the infant is a kind of mattress of the stuffed herb called *Spanish Beard*, and under its head is a little skin cushion, stuffed with the same herb. The infant is laid on its back in the cradle, and fastened to it by the shoulders, the arms, the legs, the thighs, and the hips; and over the forehead are laid two bands of deerskin, which keep its head to the cushion, and render that part flat."

Garcillasso De La Vega[2] states that the Spaniards, during the invasion by Ferdinand De Soto, met with some Indians whose heads were moulded in the manner just described. "Their heads are incredibly long and pointed upwards, owing to a custom of artificially compressing them from the period of the child's birth until it attains the age of nine or ten years." Dr. Morton[3] remarks on these observations by Garcillasso, that the people thus described are said to inhabit the province of Tula; and it is curious to observe that this name was also that of the Toltecan capital of Anahuac, and signified a *place of reeds*. The same name is found in Texas and Guatemala, indicating the migrations of the Toltecan nation.

It is therefore a reasonable presumption that the Natchez were a colony of the old Toltecan stock. Mr. Nuttall thinks that the place called Quigalta in De Soto's narrative, where he expired, was within the Natchez territory.

Several other tribes of southern Indians practised the art of changing the form of the skull. In this respect, as well as in their traditional wanderings from the west, and in certain religious ceremonies, they appear to have been related to the Natchez.

Among the southern Indians, as well as in Peru and the West Indies, two distinct methods of flattening the cranium were employed; the one apparently identical with that of the ancient Peruvians, the Caribs, and the Chinooks of the present day; and the other, similar to that practised by the Toltecs, the Natchez, and the stone-grave race and mound builders of Tennessee.

Bryan Edwards,[4] in his "History of the West Indies," quotes Oviedo, to the effect that the warlike nation of cannibals (Caribbees, or Charaibes) alter the

---

[1] History of Louisiana, vol. ii, p. 162.
[2] Hist. de la Florida, lib. iv, cap. 13.
[3] Crania Americana.
[4] Vol. i, p. 45.

natural configuration of the head by binding the tender and flexible skull of the child, immediately after birth, between two small pieces of wood, which, applied before and behind, and firmly bound together on each side, elevated the forehead, and occasioned the back part of the skull to resemble two sides of a square. The great difference in language and characters between these savage cannibals and the more civilized inhabitants of Cuba, Hispaniola, Jamaica, and Porto Rico, gave birth, at an early day, to the opinion that their origin also was different. Rochefort is evidently in error when he refers the origin of the Caribs to Florida. It is true (as can be shown by the accounts of the early explorers) that these savages occupied the shores of Florida, but they extended also along the shores of the Gulf of Mexico, around the peninsula of Yucatan, down along the shores of Central America and the Isthmus of Panama, all around the borders of the Caribbean Sea, throughout the whole province of Surinam, and even to Brazil. It would appear that even as late as 1719, a fragment of this powerful race of savages inhabited the coast of Louisiana, for Du Pratz[1] states that along the coast on the west of the mouth of the Mississippi, "inhabit the nation called *Atacapos*, that is, man-eaters, being so called by the other nations on account of their detestable custom of eating their enemies."

It would appear from the numbers and power of this maritime nation, as well as the perfection to which they had brought their arts of war and navigation at the time of their discovery by Columbus in 1492, that they had existed for ages, and were probably equal in antiquity to the aboriginal inhabitants of Mexico, Central America, and Peru.

The ancient natives of Hispaniola, Cuba, Jamaica, and Porto Rico, spoke the same language, possessed the same institutions, practised the same religious rites, arose from one common origin, and emigrated anciently from the Mexican empire. In common with the Caribs, they altered the natural configuration of the head in infancy, but after a different mode. The sinciput, from the eyebrows to the coronal suture, was depressed, which gave an unnatural thickness and elevation to the occiput. "By this practice," says Herrera, "the crown was so strengthened that a Spanish broad-sword, instead of cleaving the skull at a stroke, would frequently break short upon it."

According to James Adair,[2] "the Choctaws (Choktah) flatten their foreheads with a bag of sand, which, with great care, they keep fastened to the skull of the infant, while it is in its tender and imperfect state." The testimony of Bartram[3] is to the same effect. John Lawson,[4] in 1700, described the powerful tribe of Waxhaws, as resorting to the compression of the cranium by artificial means. And in like manner, the Osage[5] Indians, who have been described as the tallest race of men in North America, either red or white, alter the shape of the head during infancy by gentle compression.

---

[1] History of Louisiana, vol. ii, p. 152. [2] History of the American Indians, p. 284.

[3] Travels through North and South Carolina, East and West Florida, etc., by William Bartram. Phila. 1791, p. 519.

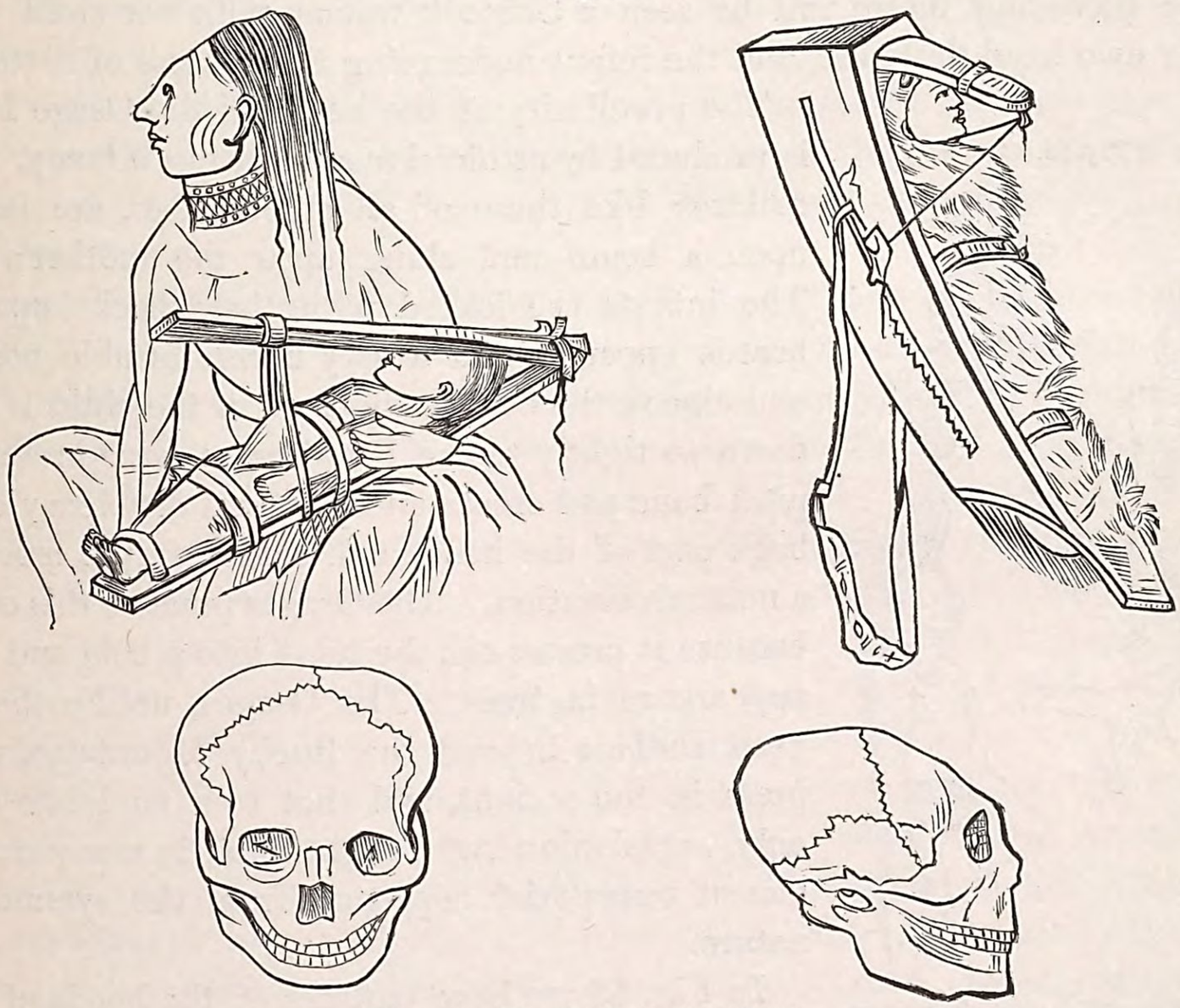
[4] A New Voyage to Carolina, etc., p. 33.

[5] Catlin's North American Indians, vol. ii, pp. 40–41.

The Flat-heads, a numerous people inhabiting the shores of Columbia River, and a vast extent of country lying to the south of it, resort to various mechanical contrivances to effect the flattening of the head; and the model of deformity is the same throughout the different bands, consisting in a depression of the forehead and consequent elongation of the whole head, until the top of the cranium becomes, in extreme cases, a nearly horizontal plane.

According to Mr. Townsend,[1] "the mode by which the flattening is effected varies considerably with the different tribes. The Wallamat Indians place the infant, soon after birth, upon a board, to the edges of which are attached little loops of hempen cord or leather. Other similar cords are passed across the back in a zigzag manner, through these loops, inclosing the child, and binding it firmly down. To the upper edge of this board, in which is a depression to receive the back part of the head, another smaller one is attached by hinges of leather, and made to lie obliquely upon the forehead. The force of pressure is regulated by small strings attached to its edge, which are passed through holes in the board upon which the infant is lying, and secured there.

Fig. 64.



Chinooks (Flat-heads), after Catlin.

"The method practised by the Chinooks and others nearer the sea differs widely from that of the upper Indians, and appears somewhat less barbarous and cruel. A sort of cradle is formed by excavating a pine log to the depth of eight or ten inches. The child is placed in it on a bed of little grass mats, and bound down

[1] Tour to the Columbia River, p. 175.

in the manner above described. A little boss of tightly plaited and woven grass is then applied to the forehead and secured by a cord to the loops at the side. The infant is suffered to remain thus from four to eight months, or until the sutures of the skull have in some measure united and the bone become solid and firm. It is seldom or never taken from the cradle, except in case of severe illness, until the flattening process is completed."

The effect of this process is to depress the head, to widen the face, to diminish the facial angle, and to augment the breadth between the parietal bones. A striking irregularity of the two sides of the cranium almost invariably follows; yet the absolute internal capacity of the skull is not diminished, and the intellectual faculties are not impaired to any known or perceptible degree. The testimony of all travellers is, that their intellect is equal if not superior to that of the other Indian tribes of North America.

Dr. Scouler states that the people by whom it is practised are peculiarly subject to apoplexy.

The method of practising this compression of the head, as well as its effects, are illustrated by Fig. 64.

In the preceding figure will be seen a Chinook woman with her child in her arms, her own head flattened, and the infant undergoing the process of flattening.

Fig. 65.

Osage chiefs and braves (after Catlin), illustrating the effects of a compression of the occiput.

The peculiarity of the heads of the Osage Indians is produced by artificial means during infancy. Their children, like those of all other tribes, are fastened upon a board and slung upon the mother's neck. The infants are lashed with their backs upon the boards apparently in a very uncomfortable position; and among the Osages the head of the child is bound down so tightly to the board as to force in the occipital bone and create an unnatural deficiency on the back part of the head, and, consequently, more than a natural elevation. The Osages practise this custom, because it presses out the head into a bold and manly appearance in front. The Osages, unlike the Flathead Indians beyond the Rocky Mountains, merely press in the occiput, and that to a moderate degree only, occasioning but a slight, and, in many cases, an almost immaterial departure from the symmetry of nature.

In Fig. 65 we have outlines of the heads of Osage Indians, after Catlin, illustrating the appearance of the countenance induced by artificial pressure similar to that which was employed by the Natchez Indians.

Dr. Scouler has observed that the idioms of the Nootka Columbians, though they are a distinct branch, indicated traces of remote connection with the dialects of the northern tribes; and it is believed by some ethnologists that both these groups of languages originated from one common stock. Dr. Pritchard, in his

"Natural History of Man," remarks upon the Flat-heads, that, what is more interesting, are the signs of remote affinity which both display to the Aztec, a fact which recalls the tradition that the Nahuatlacas originated from a region to the north. Anderson observed, long ago, that the language of Nootka bears a strong resemblance to the Mexican, in the termination of words, and in the frequent recurrence of the same consonants. The same phenomena have fallen under the notice of Humboldt, who remarks that, on a careful comparison of the vocabularies collected at Nootka Sound and at Monterey, he was astonished at the resemblance of the sound and terminations of words to those of the Mexican; as, for example, in the language of Nootka, apquixitl is to embrace; temextixitl, to kiss; hitltzitl, to sigh; tzitzimitl, earth; Imcoatzimetl, the name of a month.

We have now presented various facts bearing on the singular custom of flattening the head, and, although some of the nations practising it occupied North America, and some of them South America, and were separated thousands of miles from each other, at the same time, there appears to be no reasonable probability that any two widely separated savage tribes would have hit upon precisely the same singular mode of altering the configuration of the cranium. Therefore we are justified in the conclusion that, at some former period, they were parts of the same family.

The weight of testimony would seem to show that this custom was practised at a remote period in the history of North America by the Toltecs, and was, most probably, widely disseminated at the time of their dispersion into various parts of the Continent.

The once powerful but now extinct nation of the Natchez, in their hereditary distinctions, their fixed institutions, in the practice of human sacrifices on the death of eminent persons, in the worship of the sun, and in the peculiar form and characteristics of the cranium, bore obvious analogies with the Toltecs.

If the tradition of the Natchez, corroborated, as it is, by the testimony of the followers of De Soto, by the statements of the early explorers on the Mississippi between 1682 and 1695, and by Du Pratz, who enjoyed the confidence and esteem of their great men and suns, be true, this nation once reigned over all that territory in which the mounds are now discovered, and they and their associated nations should be considered as the mound builders.

At the time of their greatest power, the Natchez are said to have had from 500 to 800 suns or sachems of the nation. Du Pratz, who resided amongst the Natchez, and enjoyed every means of gaining full and accurate information, says that, "according to their traditions, they were the most powerful nation of all North America, and were looked upon by the other nations as their superiors, and on that account were respected by them. *To give an idea of their power, I shall only mention, that formerly they extended from the river Manchac, or Iberville, which is about* 50 *leagues from the sea, to the river Wabash, which is distant from the sea about* 460 *leagues; and that they had about* 800 *suns or princes.* From these facts we may judge how populous this nation formerly has been; but the pride of their great suns, or sovereigns, and likewise of their inferior suns, joined to the prejudices of the people, has made greater havoc among them, and contributed

more to their destruction, than long and bloody wars would have done. As their rulers were despotic, they had, for a long time past, established the following inhuman and impolitic custom, that, when any of them died, a great number of their subjects were likewise killed; and the people, on the other hand, had imbibed the belief, that all those who followed their princes into the other world to serve them there, would be eternally happy. It is easy to conceive how ruinous such an inhuman custom would be among a nation who had so many princes as the Natchez." [1]

The traditions of the Natchez bear marks of probability which have been confirmed by discoveries made near the Gulf of California and on the rivers Gila and Yaquasila.

Du Pratz, who gathered his information from the keeper of the temple and from the Great Sun, states that the Natchez held the tradition that they came from a pleasant country and mild climate, "under the sun," and in the southwest (Mexico?), where the nation had lived for many ages, and had spread over an extensive country of mountains, hills, and plains, in the latter of which the cities were built of stone, and the houses were several stories in height. "We lived," said the keeper, "in a fine country where the earth is always pleasant; there our suns had their abode, and our nation maintained itself for a long time against the ancients of the country, who conquered some of our villages in the plains, but never could force us from the mountains. Our nation extended itself along the great water, where this large river (Mississippi?) loses itself; but as our enemies had become very numerous and very wicked, our suns sent some of their subjects, who lived near this river, to examine whether we could retire into the country through which it flowed. The country on the east side of the river being found extremely pleasant, the Great Sun, upon the return of those who had examined it, ordered all his subjects who lived in the plains, and who still defended themselves against the ancients of the country, to remove into this land, here to build a temple, and to preserve the eternal fire. A great part of our nation, accordingly, settled here, where they lived in peace, and abundance for several generations. The Great Sun, and those who had remained with him, never thought of joining us, being tempted to continue where they were, by the pleasantness of the country, which was very warm, and by the weakness of their enemies, who had fallen into civil dissension. . . During these discords among our enemies, some of them even entered into an alliance with the Great Sun, who still remained in our old country, that he might conveniently assist our other brethren, who had settled on the banks of the great water, to the east of the large river, and extended themselves so far on the coast, and among the isles, that the Great Sun did not hear of them sometimes for five or six years together.

"It was not till after many generations that the Great Suns came and joined us in this country, when, from the fine climate and the peace we had enjoyed, we had multiplied like the leaves of the trees. Warriors of fire, who made the earth to tremble, had arrived in our old country, and, entering into alliance with our breth-

[1] History of Louisiana, vol. ii, p. 146.

ren, conquered our ancient enemies, but, attempting afterwards to make slaves of our suns, they, rather than submit to them, left our brethren who refused to follow them and came hither, attended only by their slaves." Upon my asking him who these warriors of fire were, he replied that they were bearded white men, somewhat of a brownish color, who carried arms that darted out fire, with a great noise, and killed at a great distance; that they had likewise heavy arms, which killed a great many men at once, and, like thunder, made the earth to tremble, and that they came from the sun-rising in floating villages. "The ancients of the country," he said, "were very numerous, and inhabited from the western coast of the great water to the northern country, on this side of the sun, and very far upon the same coast beyond the sun. They had a great number of large and small villages, which were all built of stone, and in which there were houses large enough to lodge a whole tribe. Their temples were built with great labor and art, and they made beautiful works of all kinds of materials."[1]

It would appear, therefore, that in former times the Natchez had multiplied to such a degree as to spread from the Mississippi River, along its branches and head-waters, and finally to reach the Atlantic coast.

It is a reasonable presumption that the Natchez was a colony of the old Toltecan stock. It is well known that, like the Natchez, the Toltecs were governed by despotic rulers, the representatives of the sun, and that they built numerous mounds, and fortified their towns by earthworks. In common with the Mexicans and Peruvians, the Natchez held the tradition that they had received their peculiar religion and laws from a man and his wife who had come down from the sun;[2] and they also, in like manner with the Toltecs, preserved accounts of pestilence[3] which had raged during several years, and had destroyed great numbers of people.

If the tradition of the Natchez be true, it is most reasonable to refer the mounds, earthworks, and idols of Tennessee to this nation.

---

[1] History of Louisiana, vol. ii, pp. 109–113.
[2] Du Pratz, History of Louisiana, vol. ii, p. 175.
[3] Du Pratz, History of Louisiana, vol. ii, p. 180.

CHAPTER VII.

RELICS FROM THE MOUNDS AND STONE GRAVES.

It has been well said, that the fabrics of a people unlock their social history; they speak a language which is silent, but yet more eloquent than the written page. As memorials of former times, they commune directly with the beholder, opening the unwritten history of the period they represent, and clothing it with perpetual freshness; however rude the age, or uncultivated the people from whose hands they came, the products of human ingenuity are ever invested with a peculiar and even solemn interest.

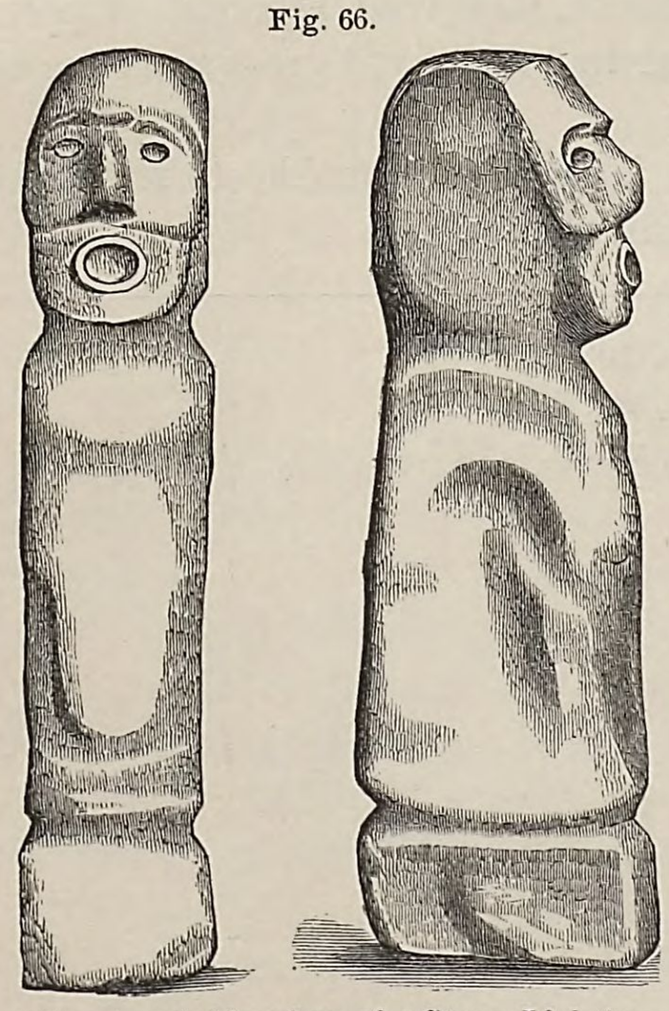
Stone and Clay Images.

That the aborigines of Tennessee were idolaters is manifest from the stone and clay idols which have been found in various portions of the State; some of which were discovered in caves, and others upon the summits of high mounds.

These idols are of various sizes, from the large stone images, two feet in height, to the small clay figures, not more than two inches in length.

They were carved from various materials, such as limestone, sandstone, fluor-spar, and steatite.

Fig. 66.



Front and side view of a Stone Idol from Knox County, Tennessee. Height 20 inches.

That, in some instances at least, they were fashioned on the spot where they are now found, is manifest from the position in which the stone image shown in figure 66 was discovered.

This remarkable idol was discovered in a cave, on the banks of the Holston River, near Strawberry Plains, in Knox County, Tennessee. The cave appeared to have been used by the Indians for purposes of worship. The image is composed of yellow crystalline limestone, similar in all respects to the stalagmites, stalactites, and incrustations of the walls of the cave. In fact, it appears to have been fashioned from a large stalactite, and the point at which the back of the head was attached to the walls of the cave is represented in the profile view.

It will be conceded that this image bears, in its features, a general resemblance to the characteristic physiognomy of the North American Indians of the present day. This resemblance is seen in the narrow retreating forehead, heavy superciliary ridge, prominent angular nose, full cheeks, and broad, square chin. As far as we can gather from

the rude outlines of the body of this image, it appears to have been the design of the artist to carve the legs and feet in a bent, or kneeling position.

Two remarkable stone idols, discovered in the Valley of the Cumberland River, in the neighborhood of large pyramidal mounds and numerous stone graves, are represented in Figs. 67 and 68.

In Fig. 67 the full face is given, and in Fig. 68 the side, or profile view. Both these idols are composed of a dark hard sandstone. It will be seen that, in the general cast of countenance and mode of dressing the hair, they differ considerably from the preceding image (Fig. 66), and wholly from the general form of the cranium and head-dress of the North American Indians of the present day.

Fig. 67.

Fig. 68.

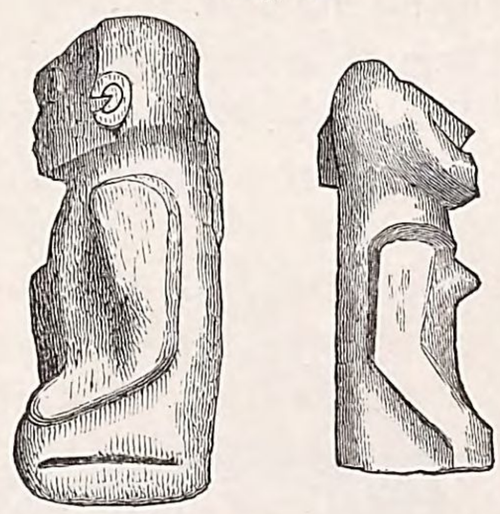


Fig. 67. Stone Idols, male and female, from Cumberland Valley; front view.
Fig. 68. Stone Idols, from Cumberland Valley, Tennessee; side view.

The larger idol, 13.3 inches in height, represents a muscular man. The thorax is more prominent than the abdomen, which is carved out, so as to form a depression. The figure is half sitting and half kneeling, resting on the left knee and on the right foot. The right hand and forearm rest upon the right thigh and knee.

The face is characterized by a prominent, but broad nose; large, oval eyes; full lips; wide mouth; strong, well-marked chin and lower jaw; angular face; and broad, retreating forehead. The hair is represented as rising up from the forehead in a distinct, elevated roll, and drawn back, and gathered into a cue behind, after the manner of the Chinese. The plow-share struck off a portion of the cue, as will be seen in the profile, Fig. 68. The head-dress of this idol might also be compared to some of the wigs with cues formerly worn in civilized countries.

The simplicity of the design, as a whole, not only indicates the great antiquity of this sculpture, but also justifies the belief that its authors had made considerable advances in arts.

The female idol, 11.6 inches high, represented in the same figures (67 and 68), is from a hard, dark-brown sandstone, similar to that from which the male idol was formed, but harder and more compact, and its grain is susceptible of a higher polish.

In the male idol, as we have observed, the shoulders are broader than the hips; while, in the female idol, the hips are broader than the shoulders. The nose is perfectly straight in the female idol, and is more delicate in its form. The eyebrows are more prominent, deeper set, smaller, and more ovate or almond-shaped.

The mouth is smaller than in the male; the lips are more prominent, and the tongue is pressed out between the lips. The hair, or head-dress, rises up more distinctly and forms an angle on the temples, and is drawn up behind into a knot, after the manner practised by some of the Asiatic nations. The mammæ are small, round, well formed, and the little nipples distinct. The female organs of generation are carved in relief.

The kneeling posture indicates the act of worship; the face of the female idol is turned upwards, while that of the male looks forwards.

The form of these idols still further sustains the conclusion that the stone-grave race of Tennessee was distinct from the nomadic and hunting tribes of North America, and that this extinct race, in former times, may have come in contact with the nations of the east.

Figs. 69 and 70 represent the head of an image discovered in 1845, in Henry County, Tennessee. This striking and beautiful image is carved out of white compact fluor spar, a mineral unknown in this portion of the Mississippi Valley.

Fig. 69.

Fig. 70.

Fig. 69. Front view of a stone image, from Henry County, Tennessee. One-fourth natural size.
Fig. 70. Profile of the image.

My attention was called to the existence of this object by the following extract from a communication which appeared in the "Franklin Weekly Review" of October 18, 1868, written by Mr. S. H. McWhirter:—

"In the spring of 1845, I was at Paris, the county seat of Henry County, Tennessee, and there saw and purchased a sculptured image, found a few days before at or near one of the largest mounds in this State upon the lands of Amos Milcken and Solomon Hartsfield.

"Mr. Hartsfield was cleaning out what he thought to be a sink, and struck his hoe against and dug up the image.

"There is a wall in the shape of a horse-shoe, a mile or two in circuit, in some places of sufficient height to be a barrier to stock, inclosing two square mounds and eight rectangular ones. The main square mound is about 100 feet high, the other, 60 or 70 feet in height; both have large trees growing over them. There are also three mounds, eight or ten feet high, and fifteen or twenty feet across,

filled with fragments of human bones; the others seemed to be composed of compact clay and sand two and a half feet high.

"The large square mound is flat on the top, and, if the trees at the base were cut away, it would command a view for miles around. It has been constructed so as to face the cardinal points exactly.

"The head and part of the body in this image are still preserved; and I should have had it entire, but for the accident of having my house burned in 1857. I had a great many curiosities burned with my cabinet, and now take little interest in such things.

"There is an old town site, at or a little above the mouth of the Hiawassa River, made perhaps by the same people. The spring freshet of 1867 washed the surface from the island, and long rows of graves, clay pots, teeth, and other relics are found in abundance. I found a tibia and fibula three and a half inches longer than in the average leg of the white race, and two singular molar teeth, with four fangs and six apices.

"The Idol, when entire, was in a sitting posture—the left knee and fore-leg resting on the ground, the left arm against the body, and the hand resting on the knee. The body stooped forward slightly; the right knee was elevated to the shoulder; the arm rested against the body, with the hand on the knee."

In the spring of 1845, Mr. Hartsfield ploughed up an image of stone, about eight miles north of Paris, Tennessee, in a piece of table-land which had been cultivated for seven years. There is a wall around this table-land, perhaps a mile or more in circumference, made of pipe clay. Within the inclosure, there are seven mounds, a deep reservoir in the centre, and two aqueducts, twenty or thirty feet wide, leading from the Obion River to the reservoir.

The mounds, wall, reservoir, and other objects indicate this to have been the site of a camp; Messrs. R. E. Dunlap, John W. Dunlap, John H. Gee, and Dr. G. Troost, State Geologist of Tennessee, have all given their certificates of the truth of the foregoing statements.

The general expression of this idol is similar to that of the large male idol, previously described, and represented in Figs. 67 and 68. The outline, however, is more spirited, the forehead is more elevated, the brow more distinct, the nose better formed, and the mouth is more expressive. The eyes, however, are not as carefully carved, as in the male idol. The mode of arranging the head-dress was similar in both, with this difference, that the Henry County idol has several notches upon the summit of the head-dress.

The Henry County image will compare favorably, in the perfection of its outline, with many of the sculptures of the Egyptians and Grecians; and it is but reasonable to suppose that its author was capable, under favorable circumstances, of attaining a high degree of perfection in his art.

The small male image (Fig. 71, A), seven inches and a half in length, carved from coarse reddish-brown sandstone, was exhumed from a mound surrounded with stone graves, in Perry County, four miles south of the Tennessee River near Clifton.

The male organ of generation, which was large and prominent in the sandstone idol A, was broken off accidentally.

Fig. 71.

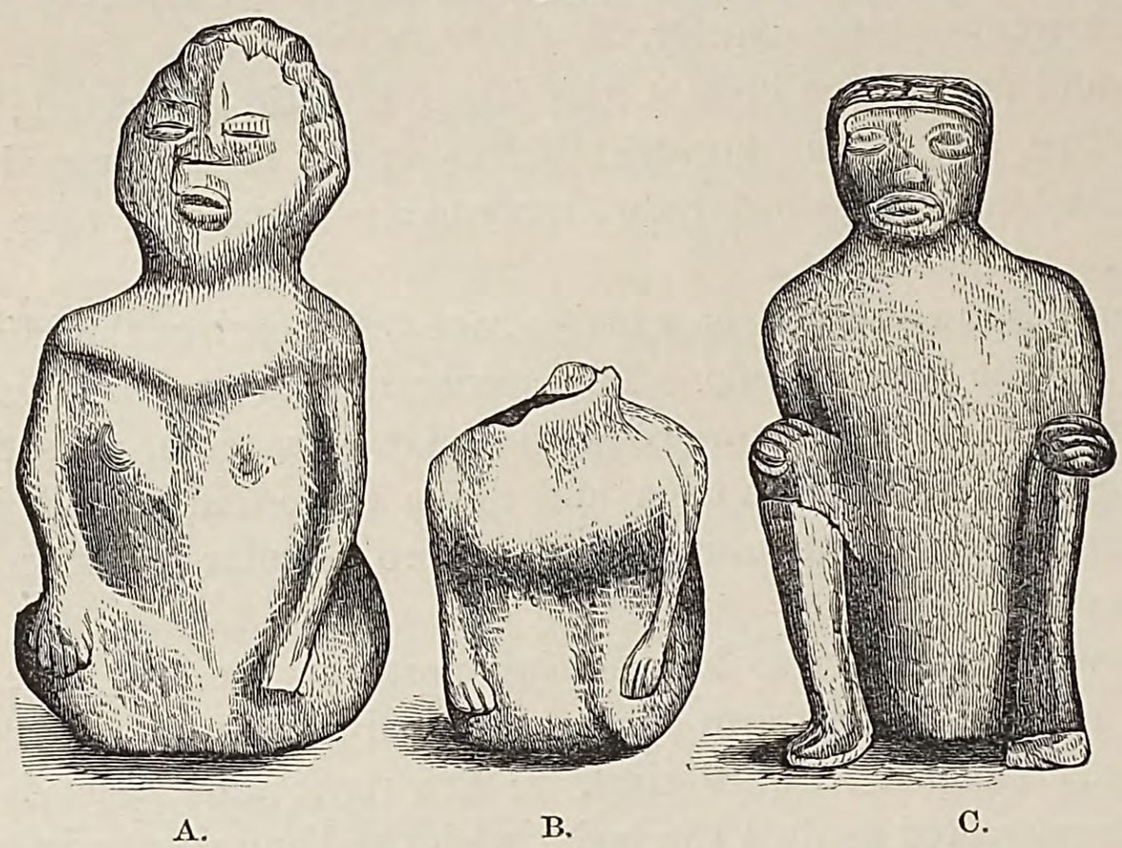


Fig. 71. A. A small idol from a mound in Perry County, near Clifton, Tennessee.
B. A small hollow clay idol, from a stone grave at Boiling Springs, Williamson County, Tennessee.
C. A black clay idol from the Pyramid of Cholula, near Mexico.

Figure B represents the body of a black female idol, obtained from a stone grave at Boiling Springs, Williamson County, Tennessee, by the late Dr. Freeman. In the same figure, a small Mexican idol C, from Cholula, seven inches in height, and composed of burnt clay painted black, is represented. I have in my possession six small terra-cotta heads from the temple of Cholula, Mexico, which exhibit the prominent nose and expressive mouth so characteristic of the Henry County fluor-spar head previously described. In four of these small figures the top of the head is smooth and without ornament; in two the head-dress is similar, but more elaborate than that of the Henry County idol, or the small stone idol A, in Fig. 71. These Mexican heads resemble closely several of those figured by Brantz Mayer,[1] found in the neighborhood of the pyramids of St. Juan Teotihuacan.

It is admitted by Humboldt and other writers, who have investigated the antiquities of Mexico, that the Temple of Cholula and the pyramids of Teotihuacan were not built by the Aztecs, but were in existence when the Mexicans, one of the seven tribes of the Anahuatlacs (inhabitants of the banks of rivers), took possession, in the year 1190, of the equinoctial region of New Spain.

The Aztecs attributed the great pyramidal monuments of Teotihuacan, Cholula, Cholollan, and Papantla to the Toltecs, a powerful and civilized nation of people who inhabited Mexico five hundred years earlier.

---

[1] Mexico as it Was, and as it Is, p. 226.

Fig. 72 represents a small idol from the Cumberland valley, composed of black clay and crushed shells, which has something resembling a cap on the head.

Some of the stone idols discovered in Tennessee lay upon the summit of the large pyramidal mounds, and appear to have been connected with the religious rites performed upon these elevations.

Fig. 72.

Image from a stone grave in the valley of Cumberland River, Tennessee; one-half natural size.

Haywood makes some interesting observations with reference to the position in which certain of these images were discovered in Sumner and Roanoke Counties.[1]

Many years ago, a clay vessel was found at Nashville, about twenty feet below the surface, in digging a well in a narrow valley, between hills liable to wash. The workmen came upon a natural spring issuing from a rock, and in the spring this pottery vessel was discovered. Its capacity was nearly one gallon. The base was circular, from which rose a globular vessel terminating at the top in the head of a woman. There was no aperture except a round hole near the summit of the globular part of the vessel. The features of the face were described by Haywood, as being "Asiatic." The crown of the head was covered with a cap or ornament in the shape of a truncated cone. The ears were very large, extending down to a level with the chin. There were some marks of paint having formerly existed on the head, though it is too much worn off to admit of any definite description.

An image was found near the base of a mound, at Mayfield's Station, twelve miles southwardly from Nashville; also another, at the base of a mound near Clarkesville; and still another, near the residence of Mr. Craighead. The image found at Mayfield's Station, in Davidson County, was of sculptured stone, representing a woman sitting upon her "hams," with both hands under her chin, and her elbows upon her knees. It was neatly formed, and well proportioned and polished. This image was kept for a long time by Mr. Boyd, at his tavern in Nashville.

Dr. Brown had two stone images which were exhumed during the ploughing of the ground, near a very large mound below Charlottesville. One represented an old man, with his body bent forward and his head inclined downwards, exceedingly well executed. The other represented an old woman.

Another idol was found near Nashville. It was composed of a clay remarkable for its fineness, and which is quite abundant in some parts of Kentucky. A small portion of gypsum was mixed with this clay. It represented a woman in a state of nudity, whose arms had been cut off close to the body, and whose nose and chin had been mutilated. It had a fillet and prominence on the head, and was said to have resembled an idol found in the southern part of the Russian Empire.

On Cherry Creek, in White County, in a southwest direction from Sparta, are the

---

[1] Nat. and Ab. Hist. Tenn., pp. 120–149.

remains of a large aboriginal town, in the field of Mr. Howard. Several mounds are there, from twelve to fourteen feet high. They were higher, or perhaps twenty feet above the ground, before the land was cultivated. Haywood states that these mounds were hollow within. A horse in ploughing fell into one of them, and some of them have sunk into a basin since the clearing of the ground. In this field was found the portion of an image from the waist upwards. The head was well carved, with the mouth, nose, eyes, and features symmetrical. The image was highly polished; and the substance of which it was made was described as being white and glittering. In the same locality were found plates and pots, with ornamented edges, carved out of the same substance. Half a mile from this place, at the foot of the mountain, is a large cave containing human bones, some of which are small and others very large. Mr. Howard, who was six feet high, affirmed that he could put the jaw of some of them around his face.

In White County, in West Tennessee, was dug up, many years ago, in an open temple situated on the Caney Fork of Cumberland River, a flagon formed in the shape of three distinct and hollow heads, joined to the central neck of the vessel by short thick tubes, leading from each respective occiput. It was made of a light yellow and compact clay, intimately mixed with small fragments and dust of carbonate of lime. This vessel held a quart. It was well executed, and the heads were natural, displaying a striking resemblance to the Asiatic countenance. A small oval prominence towards the top of each head, probably represented knots of hair. Each face was painted in a different manner; one is slightly covered over with red ochre, having deep blotches of the same paint on the central part of each cheek; the second face had a broad streak of brown ochre across the forehead and another running parallel with the same, enveloping the eyes, and extending as far as the ears; the third face had a streak of yellow ochre, which surrounded the eyes and extended across the eyebrows, another running from the centre of this at right angles down the nose to the upper lip, while another broad streak passed from each ear along the lower jaw and chin.[1]

Haywood[2] has made some observations on the *Lingam*, an image spread over the most of India, in his discussion of the aboriginal history of Tennessee.

There was found on the farm of Turner Lane, Esq., in White County, West Tennessee, five or six miles from Sparta, a piece of stone eleven inches long and about twelve inches in diameter. At one end it was sloped off to a sharp edge, which terminated at the apex in a sharp point. It was highly polished, and showed great skill in the workmanship. It was variegated with green and yellow spots, the general body of the stone being of a deep gray color. No doubt can be entertained in the mind of a careful observer, that it is not the product of this country.

Another stone of similar shape, of very high polish, and of variegated colors, was since found ten or twelve miles from Sparta, near a mound. It is now before the writer. It is about eighteen inches in length, and one and a half in diameter,

---

[1] Natural and Aboriginal History of Tennessee, p. 115.
[2] Id. pp. 154–155, p. 322.

rather broader than thick, though circular. The ends are abruptly conoidal. It is very smooth and heavy, and neatly polished. On part of one side, it seems to have received from paint a reddish hue, and the other parts of it seem to have been variegated with some coloring now dark, but probably brown formerly. It may have been used as a pestle, but it greatly resembles a phallus.

A phallus or priapus was found in or near Chillicothe, not long since, and was presented to Mr. McCullough, who deposited it in the museum of the Philosophical Society.

Dr. Gerard Troost, in his "Account of Some Ancient Remains in Tennessee," has described an idol which was inclosed in a large shell (*Casis flammea*, Linn), the interior whorls and columella of which had been removed, so that nothing but the external shell remained, which was opened in front sufficiently to permit the intrusion of the image.

This shell belongs to the tropics. The utensils which Dr. Troost found were all made of different kinds of stone, most of which may be found amongst the primitive rocks in North Carolina or Missouri, and some even in Tennessee; one, however, an *obsidian*, must have been brought from Mexico or South America. This volcanic substance is found in several parts of the Andes, particularly in Quito, Popayan, at the volcanoes of Puracé and Sotora, in the mountains of Les Nakajas, and in Mexico. These facts seem to place it beyond doubt that the Aborigines of Tennessee came from southern regions.

The observations of Dr. Troost confirmed those of Haywood, that they were idolaters and probably worshipped the phallus, in common with the ancient Egyptians, Phenicians, and Greeks.

All the images obtained by Dr. Troost during his extended geological explorations were similar to the stone images which I have described, Figs. 67, 68, 69, 70, 71 (A). They all represented naked figures in the kneeling position, and sitting on their heels. Some of them had their hands about their abdomen, others had them on their knees. Two of these sandstone images found in Smith County, representing a male and a female, were sixteen inches in height. The male seemed to be a rude imitation of an ancient priapus, with a large *membrum generationis virile in erectione.*

This is not the only instance that this *pars genitalis* has been found in Tennessee. Dr. Ramsay, who has a fine collection of these antiquities, has two *simulacra* of this member; the one is carved out of stone similar to that of Dr. Troost's images, and is of rude onstruction; but he has one which is made of a kind of amphibolic rock, about twelve inches in length, and perfectly resembling the natural object. The phallus made of sandstone is about sixteen inches in length. The one formed of amphibolic rock must have taken a long time in the making, the rock being very hard and tough, and even steel makes no impression on it. It must have been ground down with a substance of the hardness of emery; nevertheless, it is perfectly smooth, having the fat or greasy lustre characteristic of these rocks. It is not probable that the aborigines would have spent so long a time on an object, merely to satisfy some voluptuous propensities or whims; they must have served some more serious purposes, and it is very probable that they held them in

the same veneration as did the Greeks, who consecrated the organ of generation in their mysteries. The phallus and steis were exposed in the sanctuaries of Eleusis. The Egyptians consecrated the phallus, in the mysteries of Osiris and Isis, and Father Kircher mentions, on the authority of Cortes, that this worship was established in America.[1]

The general features of these images, as represented in the drawings of Dr. Troost, resemble those of the idols previously figured in this work, and, moreover, the hair is represented in a similar manner, as rising up in a roll upon the head from the forehead.

Some of the Tennessee idols resemble, in their general physiognomy, the carvings on the pyramids and stone structures of Central America, figured by Mr. John L. Stephens;[2] but they are apparently the work of a more ancient and primitive people, being almost always nude, and without the garments, the profuse ornaments, and the rich head-dress of the Central American figures.

In their bold outlines and rude simplicity, they resemble more nearly the idols and statues discovered and figured by Mr. E. G. Squier.[3]

The idols discovered at Memotombita and Zapatero by Mr. Squier resemble, in a marked manner, the stone idols of Tennessee; and the resemblance is so striking as to warrant the belief, that the people who fashioned these images in distant portions of the continent must have had a common origin.

It is a question whether the greater simplicity of the Tennessee images should not lead the archæologist to assign to them a higher antiquity than the more elaborately carved statues and temples of Central America.

Shell, Pearl, and Copper Ornaments.

The shell ornament discovered on the breast of the skeleton in the burial and sacrificial mound on the banks of the Cumberland River, opposite Nashville, and which was carved from a large flat sea-shell, resembling the *Pecten Mortoni*, appears to have been sacred, ornamental, and symbolic.

Similar ornamental patterns have been found in various portions of Middle and West Tennessee, in the aboriginal mounds and stone graves.

The construction of the ornaments from large flat sea-shells (*Pecten Mortoni*, *Pecten eboreus*, *Pecten comparitis*, and *Pecten perdeensis*); the reproduction of the same figures; the position in which they were worn, namely, upon the breast; their comparative rarity, not more than two having been found in any one burial mound; and their final deposit in carefully constructed graves near the centre of the burial and sacrificial mounds, apparently with distinguished personages, sustain the view which we have advanced, that these ornaments were of a sacred and symbolic character.

---

[1] Transactions of the American Ethnological Society, vol. i, pp. 360–364.

[2] Incidents of Travel in Central America and Yucatan, 1841, vol. ii; Incidents of Travel in Yucatan, 1848, vol. ii.

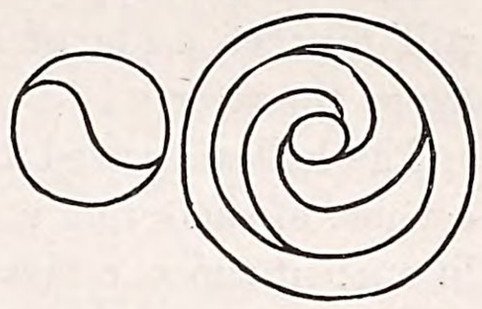
[3] Nicaragua, its People, Scenery, etc., vol. i, pp. 301–313; vol. ii, pp. 52–66.

The singular division of the circle into three portions has a slight, and perhaps fanciful resemblance to the representations of the Tae-heih of the Chinese.

Chinese philosophers speak of the origin of all things, under the name of Tae-heih. This is represented in their books, by a figure, which is formed thus;[1] On the semi-diameter of a given circle, describe a semi-circle, and on the remaining semi-diameter, but on the other side, describe another semi-circle.

In figure 73, we have a comparative view of the representation of the Chinese Tae-heih (A), and the symbolic divisions of the circle by the ancient stone-grave and mound-building race of Tennessee.

Fig. 73.



A. B.

A. Chinese figure Tae-heih.
B. Symbolic divisions of the circle by the ancient stone-grave race and mound builders of Tennessee.

We have already described at length the copper crosses evidently worn as pendants from the ears, and also the ear ornaments, composed of hard wood and covered with thin plates of copper discovered in stone graves near Nashville. It is also worthy of note, that fragments of what appears to have been a copper plate or mask, much corroded, were found above the fire vessel or altar, in the mound on the banks of the Cumberland River, opposite Nashville.

The pearl shell and bone beads seem to have been used not only as a medium of exchange, and as ornaments, but also for the record of historical and sacred facts and ideas. For the accomplishment of this latter purpose they were arranged and woven into bands and belts, the historical facts and religious ideas being conveyed by the variations of size, color, and arrangement. Many of the beads which I exhumed still retained marks of pigment. The most common substance used was the red oxide of iron. The greatest number of beads, as well as the most beautiful and valuable varieties, were found in the most carefully constructed graves, which were apparently those of the most distinguished personages.

Some of these beads were formed from pearls, others were entire marine shells of the genus *Marginella*, from the tropical shores, which had been carefully pierced, so as to admit of the passage of a thread or small string; others were made of the columella of the *Strombus gigas*, *Fasciolaria gigantea*, *Busycon carica*, and of other species of the *Muricidæ;* whilst others were carefully fashioned of bone.

The flat shells were also carved to represent the human countenance, as in the shell ornament which I removed from the breast of the child, in a stone grave, at the foot of the burial mound, opposite Nashville.

Figures of these ornaments have already been given in the third chapter.

Aboriginal Rock-paintings.

The ancient inhabitants of Tennessee have left paintings upon the rocks, some representing, possibly, the sun and moon; and others the buffalo and other animals.

The paintings are executed most generally with *red ochre*, upon high, inacessible

[1] The Chinese. A General Description of China and its Inhabitants, by Francis Davis, Esq., vol. ii, p. 147.

walls of rock, overhanging the water, and these were, without doubt, devoted to sacred purposes. They seem to have been emblematic of the sun and moon, which are supposed to have been worshipped by this people, as well as by the Natchez and Mexicans.

The painting representing the sun, on the rocks overhanging the Big Harpeth River, about three miles below the road which crosses this stream and connects Nashville and Charlotte, can be seen for a distance of four miles, and it is probable that the worshippers of the sun assembled before this high place for the performance of their sacred rites.

At Buffalo Gap, on the same stream, where the ancient trail of the buffalo is still distinct, a line of these animals is painted on the cliff of rocks which overhangs the river.

The hollow formed by the projecting rocks at Buffalo Gap, on Big Harpeth, is capable of sheltering at least one thousand men, and it would appear that this was, in ancient times, a favorite resort of the Indian hunters.

In company with Dr. Carter, who acted as my guide, I visited both these localities (the one above and the other below the extensive aboriginal remains of Mound Bottom), and sketched the paintings.

Father James Marquette, in his earliest voyage of discovery on the Mississippi, describes similar paintings on the face of a perpendicular rock between the Missouri and the Illinois.

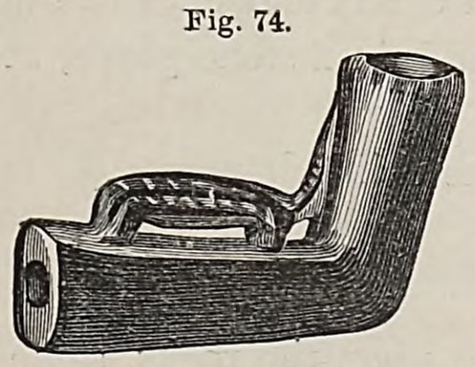
"The painted monsters," says Stoddard, "on the face of a high perpendicular rock apparently inaccessible to man, between the Missouri and Illinois, and known to the moderns by the name of Pisa, still remain in a good degree of preservation."[1]

John Haywood[2] has some observations on the sun and moon painted upon rocks.

Pipes.

The aborigines of Tennessee displayed great taste and skill in the carving of pipes from sandstone and steatite, as we have shown by the specimens figured and described in the preceding chapters. The large parrot-shaped pipe (Fig. 58), carved out of chocolate-colored steatite, is 12 inches in length, and was discovered in the vicinity of aboriginal remains, near Murfreesboro. The large heavy pipe representing, apparently, an American quail (Fig. 53), and obtained near Old Town, was formed from dense, coarse, light-brown sandstone. I have seen some of these aboriginal pipes fashioned of hard greenstone and highly polished, which were over eighteen inches in length. In Fig. 74 we have the representation of a beautiful highly polished stone pipe, which was carved from a dense, reddish-green and brown steatite. The

Fig. 74.



Small stone pipe, from a mound near Hickman, Kentucky. One-fourth natural size.

[1] Discovery and Exploration of the Mississippi Valley, by John Gilmary Shea, p. 39.
[2] Natural and Aboriginal History of Tennessee, pp. 113–115.

short-legged animal carved on the bowl and stem resembles, in the long claws, in the scales upon the back, and in its general shape, the South American armadillo. It is not known that any animal of this character ever existed in Tennessee.

At the State capitol in Nashville, there is a small collection of aboriginal remains, amongst which we observed several vases, a number of stone implements, and two large pipes made from a light-brown steatite, and having the general form of the large chloritic pipe from the aboriginal remains, near Murfreesboro.

Weapons.

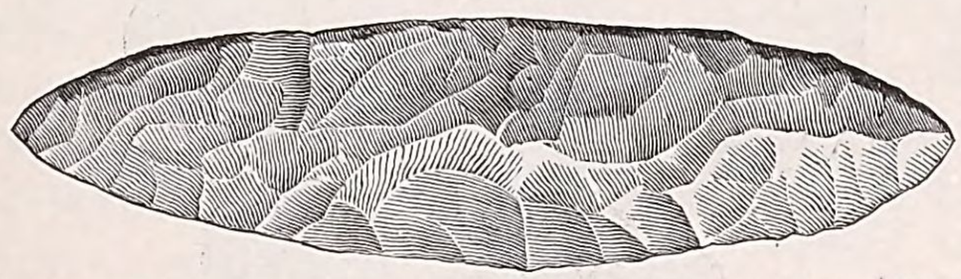
In the preceding chapters we have given descriptions and drawings of various warlike implements found in the stone graves and mounds; and it is evident that, in the main, they correspond with those in use generally by the Indians of North America, at the time of the discovery by Columbus, and even at the present day, in regions remote from civilization.

We have also called attention to the skill displayed in the manufacture of the double-headed stone hatchet, and the long pike or "*Stone Sword.*"

Many of the arrow- and spear-heads were made with great care, and presented an appearance of remarkable delicacy and symmetry. This was especially true with reference to the small sharp arrow points found in some of the stone graves in the burial mound on the banks of the Cumberland, opposite Nashville. The penetrating power of these must have been very great. They seem to have been formed so as to be fastened in the split end of the shaft, and to be readily detached after penetrating the flesh.

The implement represented in Fig. 75 has a very keen cutting edge, and, from its oval shape, was probably used as a scalping knife, and fleshing instrument.

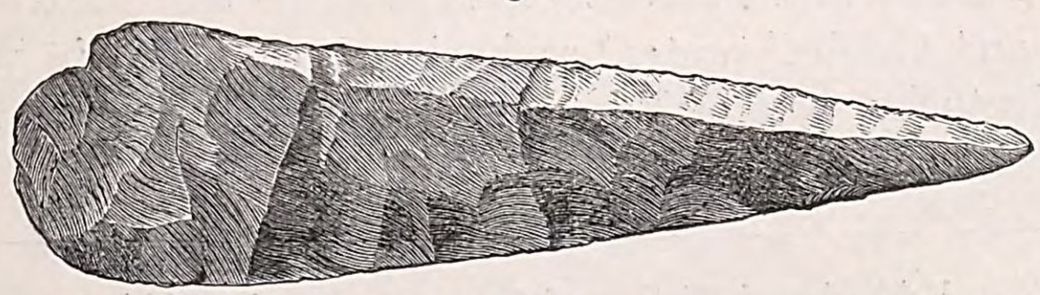
Fig. 75.



Stone implement (*Scalping Knife*), from the valley of the Cumberland River. One-fourth natural size.

The broadest portion of the stone implement, represented in Fig. 76, has a sharp edge, and it is evident from its shape, that it might have been used as a dagger, a scalping knife, or as a spear point. I have a long, sharp piece of silex with the handle turned at an angle, which was evidently used by the aborigines as a dagger.

Fig. 76.



Chipped celt, from a stone grave in Cumberland valley. One-half natural size.

The stone spear-head of jasper, Fig. 77, is remarkable for its finish and symmetry.

The spear-head represented in Fig. 78, appears to have been one of the most common forms of warlike implements, used by the aborigines of Tennessee.

Fig. 77.

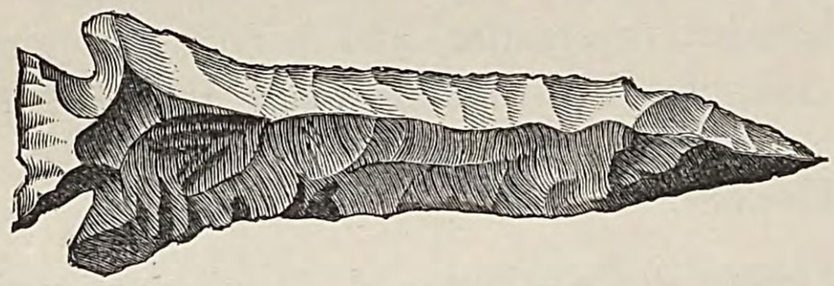


Fig. 78.

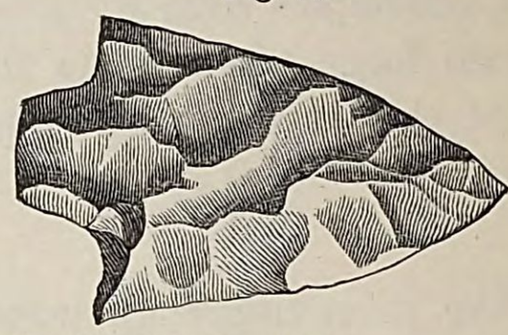
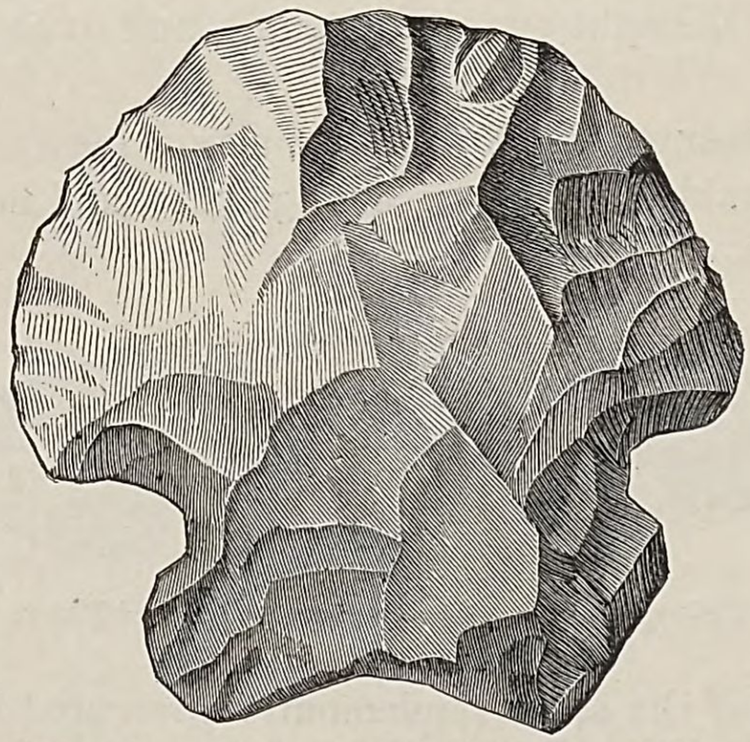


Fig. 77. Jasper spear-head, from the Cumberland valley. One-fourth natural size.
Fig. 78. Jasper spear-head, from a stone grave, Tennessee. One-fourth natural size.

These illustrations might be multiplied almost indefinitely, for there is not a cultivated field along the streams of Tennessee which does not yield various forms of arrow-heads, spear-heads, and scalping knives, of various sizes and forms. The extraordinary number of these weapons scattered over the face of the country, attests at once the warlike character and the vast numbers of the aboriginal inhabitants.

The implement represented in Fig. 79, fashioned of hard silex, was probably used as a battle-axe, the edges being too thick and blunt, either for thrusting or cutting.

Fig. 79.



Stone implement of silex, from the valley of the Cumberland. One-fourth natural size.

Coins.

During my explorations, I discovered no coins nor medals of any kind in the stone graves and mounds of Tennessee. It is probable that the coins described by John Haywood[1] and Caleb Atwater,[2] as having been found in various parts of Tennessee and Kentucky, were of European origin, and brought over by the early Catholic missionaries and explorers.

---

[1] Aboriginal History of Tennessee, pp. 173–184.
[2] Archæologia Americana, pp. 114–120.

Implements of Stone employed for Mechanical Purposes.

Tools.—In Fig. 80 is represented a symmetrical plummet-shaped implement of magnetic oxide of iron, highly polished, with a hole through the upper end. Length 3.4 inches.

It is supposed that these implements, a number of which have been found in middle Tennessee, in the cultivated soil, and also in the stone graves, were used in spinning thread, and in weaving. It has also been suggested that they may also have been employed as weights to the lines in fishing.

Fig. 80.

Plummet of black magnetic iron.

The testimony of Du Pratz[1] and Adair[2] establishes the important fact that the Indians inhabiting the Southern States and those bordering on the Mississippi River and its tributaries, as far as the Ohio and beyond, understood the art of weaving beautiful and substantial fabrics, from vegetable fibre, from the hair of the buffalo, from the quills of the porcupine, and from feathers. It is still further evident that, so far from these arts being derived from the Spanish, French, Dutch, and English explorers and colonies, they were possessed and exercised in the greatest perfection, before the arrival of Europeans, and were gradually abandoned, on account of the introduction of cheaper and more abundant supplies of foreign fabrics.

The conoidal implement with a flat base represented in Fig. 81 is made from black magnetic oxide of iron. Height, 1.2 inches; diameter of the base, two inches.

Fig. 81.

Cone of hæmatite, from the Cumberland valley.

The surface of this object is smooth and highly polished, and it may have been used in games, as a quoit, or for the purpose of rubbing and grinding the pigments used by the aborigines.

In previous chapters we have figured and described the discoidal stones with plane and biconcave surfaces. Some of these were biconcave, and perforated in the centre with a small, round, carefully drilled hole. Many of the biconcave discoidal stones, especially those of the largest size, have been, with reason, supposed to have served the purpose of mortars for crushing Indian corn, or for grinding paint. In some instances they have been found with a carefully constructed round stone fitting accurately in the concave excavation; and it is probable that this stone was used as a pestle to grind or crush the corn, paint, or dried herbs used as medicines.

The discoidal stones, with plane surfaces, were fashioned of various materials, such as pudding stone, silex, jasper, sandstone, chloritic slate, and serpentine.

These stones were used in games by the Indians, as in the game called *Chunké*, by the Chactaws.

Bernard Romans gives an interesting description of this game, as practised by the Chactaws.[3]

---

[1] The History of Louisiana, etc., vol. ii, pp. 226–232.

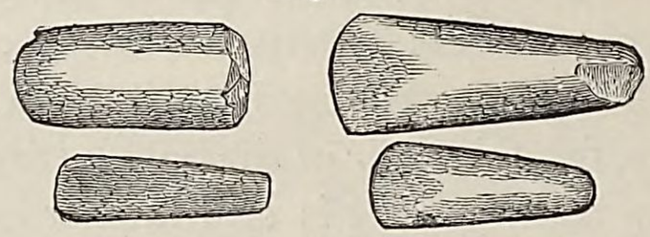
[2] History of American Indians, p. 424.

[3] Concise Natural History of East and West Florida, 1776, p. 79–80.

It is evident, from the great care with which these discoidal stones were fashioned and the perfection of their form, that they were greatly valued by the Indians. They are of comparatively rare occurrence in the stone graves, because their manufacture required great labor and time, and it is probable that only two or three of these stones were found in each village, town, or encampment, and that they were deposited only in the grave of the owner at the time of his death.

In Fig. 82 we have a group of stone implements, which were used by the aborigines of Tennessee for various purposes, such as the excavation of boats, felling trees, cleaning hides, and cultivating the soil.

Fig. 82.

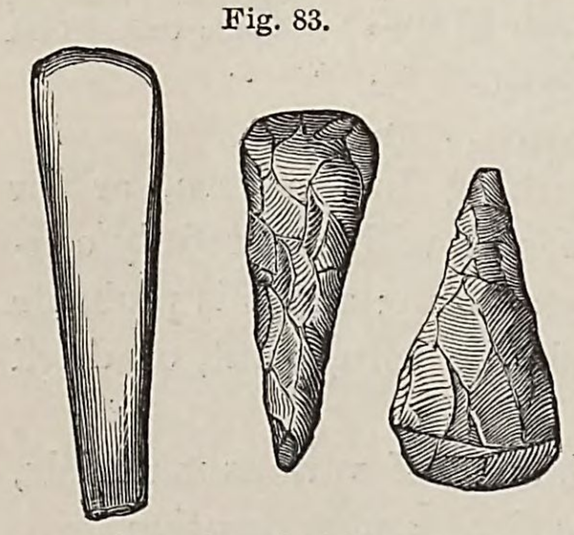


Celts from middle Tennessee, about one-eighth of the natural size.

A stone celt which I obtained from Mound Bottom, on the Big Harpeth River, is massive, weighing four pounds two ounces. It is thirteen inches long, and four inches broad at the cutting edge. This implement, formed from a hard dense greenstone, highly polished, appears to be too heavy and unwieldy to have been used as a *battle-axe*, and was more probably used in excavating boats, in felling trees, or in crushing bones and small twigs.

One of the stone implements of hard greenstone, eighteen inches in length, which we have previously described in connection with the remains at Old Town, is among the most symmetrical and highly polished of the aboriginal relics. In the museum of the Tennessee Historical Society, at Nashville, are two similar implements, apparently modelled upon the same plan, but smaller.

Fig. 83.



A. B. C

Celts from the valley of the Cumberland River, about one-eighth natural size.

The large celt A, in Fig. 83, is formed of a dense, olive-green, variegated stone, and highly polished. It weighs two pounds ten ounces; and measures eleven and one-half inches in length, three and three-tenths inches in breadth, and is one inch thick.

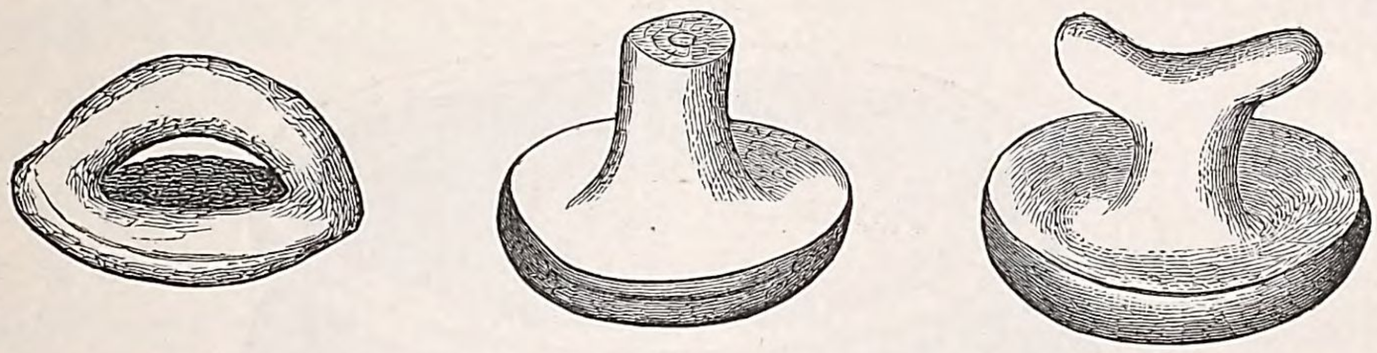
It would require a strong arm to wield such a weapon when mounted on the end of a long handle as a battle-axe. Such weapons would be too heavy and unwieldy for long marches, requiring great endurance and protracted exertion, in the rapid pursuit, sudden attack, and precipitate retreat, which characterized the military tactics of the North American Indians. If used at all in warfare, such weapons must have been employed solely in the local defence of the walled towns.

The implements represented by B and C are flaked from dark silex; the edges, however, are polished, as if they had been employed for spades in digging the ground. The implement B weighs two pounds; is ten and one-half inches in length, and four and one-half inches in breadth; C is eight and one-half inches in

length, and four and one-half inches in breadth. The most plausible supposition as to the use of these broad, flat, and comparatively blunt implements, is that they were employed as spades, or trowels, or hoes in agriculture, and in the excavation of ditches, and in the formation of embankments and mounds. The edges are too blunt for cutting purposes; and the broad flat edges are highly polished, just as the plough-share and iron hoe receive a high polish from repeated use in the cultivation of soils.

The singular implements represented in Fig. 84 are formed of a mixture of clay and coarsely crushed shells; and have been subjected to the action of fire. The clay thus prepared has attained the hardness of stone.

Fig. 84.



A. B. C.

Implements fashioned of clay and crushed shells, from ancient works in the valley of Cumberland and Harpeth Rivers.

The projections were evidently to be held in the hand, and these implements were used most probably for crushing parched corn and beans, or for dressing and smoothing hides. The flat surface of each disk presents a polished appearance, and the ends of the fragments of shells are worn as if from constant attrition. The discoidal portion of A is ellipsoidal, being five and three-fourths inches in the longest diameter, and three and fourteen-sixteenths inches in the short diameter. The discoidal portion of C is circular, the diameter being four and three-fourths inches.

The manner of employing stone implements in clearing the forests has been described by Du Pratz[1] and Adair.[2]

The aborigines of Florida, when first discovered, in like manner cleared the forests and cultivated the soil.

The artist Le Moyne, who accompanied the French Admiral Renaud de Laudouniére to Florida, in 1564, and who made numerous drawings of the natives, illustrating their appearance, manners, customs, and pursuits, gives, in the thirty-eighth plate of his work, a view of the Indians preparing their fields by digging up the soil with rude hoes; others follow with canes, with which they make holes certain distances apart; the women next followed with corn in the baskets, which they dropped in the holes.

It is evident, therefore, not only from the position of the ancient encampments and towns of the aborigines of Tennessee, in fertile valleys, eminently adapted to the cultivation of Indian maize, but also from the character of many of the stone

[1] Vol. ii, pp. 223–226.

[2] History of the North American Indians, pp. 405–406.

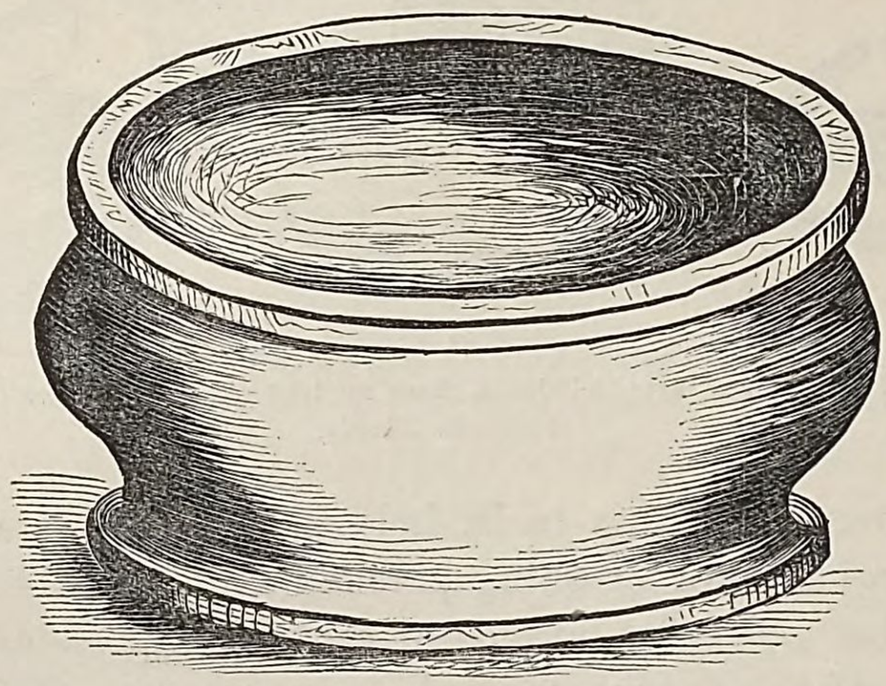
implements, that in common with many of the Southern nations, they cultivated the soil and subsisted chiefly by agriculture. And, in this fact, we have the explanation of the marks of a much larger population than in regions inhabited by the nomadic tribes.

Stone and Earthenware Vessels.

The aborigines of Tennessee, as a general rule, made their drinking and culinary vessels of a mixture of clay of various colors, and crushed shells; but it is now well established that they occasionally formed large vessels of stone.

The large limestone vessel represented in the following figure was obtained from a mound in Mississippi.

Fig. 85.



Stone vessel from a mound near the Tallahatchie River, in Fayette County, Mississippi.

Col. Peyton Skipwith, of Oxford, Mississippi, obtained this remarkable vessel from a mound in the valley of the Tallahatchie River, in Northern Mississippi. When it came into his possession, it had an artistically wrought cover, which fitted accurately over the mouth of the vase. This cover was unfortunately lost during a fire which consumed the office of Col. Skipwith. The following are the dimensions: height, eleven and one-half inches; long diameter, twenty-two inches; short diameter, fifteen inches; depth of bowl, eight and one-half inches; thickness of rim, one inch. On either side of the elliptical body are two projections or handles. The oval is symmetrical, and the outlines of the surface regular, with no marks of cutting instruments. The bottom of the vase is excavated, apparently with the design of rendering it lighter, and shows the marks of cutting instruments. The interior is smooth and regular. The vessel weighs over one hundred pounds, and is lifted and carried with difficulty by a strong man.

It is supposed to have been used as the receptacle for the ashes of the dead.

The taste and skill of the aborigines of Tennessee are well shown in the great variety and beauty of the vases, drinking cups, and culinary vessels, which I exhumed from the stone graves and mounds, and which have been described at length in the preceding chapters, and more especially in Chapters III, IV, V, and VI.

In many of the vases, a high polish has been imparted to the exterior.

From the great variety in size and form, it would appear that they were to a great extent made in accordance with the taste and skill of each potter and tribe, and not on established models.

We have already presented, in preceding chapters, detailed descriptions of many of their interesting relics, such as the painted vases from the burial mounds on the banks of the Cumberland and Harpeth Rivers, the animal-shaped vases, and those ornamented with the human countenance.

The art of manufacturing vessels of various kinds from clay was practised by a large number of North American nations. References to these are found in Du Pratz[1] and Adair.[2]

One of the most striking peculiarities of some of the vases manufactured by the aborigines of Tennessee is the opening of the mouth at the side of the neck; and I have called attention to this in several hollow idols, which appear to have been used as vessels. I carefully examined the ancient and modern vases, contained in the museums of Edinburgh, Liverpool, London, Oxford, Cambridge, and Paris, in order to discover, if possible, whether any ancient or modern nation manufactured vases with the mouth opening at right angles to the ordinary opening of the vase; but I observed none which corresponded to those of the stone graves and burial mounds of Tennessee.

Upon comparison, it will be seen, that these vases resemble to a certain extent, both in design and finish, similar works of art by the ancient Mexicans and Peruvians.

Many of this class of works of art, by the aborigines of Tennessee, will in their truthfulness and simplicity, in the accuracy of the representations of natural objects, and in the spirit of their designs, compare favorably, not only with those of the Mexicans and Peruvians, but even with similar works of art by the ancient Persians and Egyptians.

---

[1] Vol. ii, p. 226.

[2] History American Indians, p. 424.

CHAPTER VIII.

GENERAL CONCLUSIONS.

I. The crania of the stone-grave and mound-building race of Tennessee possess, in a marked degree, those characteristics which distinguished the American aborigines from all other people.

II. These crania appear to belong to the Toltecan division of the American nations, being characterized, in common with those of the Inca Peruvians, and the Toltecs of Mexico, by the quadrangular form, compressed, almost vertical occiput, lateral swelling out of the sides, and elevated but retreating forehead. As in the case of the crania of the Inca Peruvians, these skulls are remarkable for want of symmetry; for in the whole number examined, scarcely one could be called symmetrical. In many of the crania, the os incæ, characteristic of the Peruvian skulls, was observed.

III. The crania of the stone graves and mounds of Tennessee have evidently been altered by artificial pressure; the occiput being greatly flattened, and in some cases rendered almost perpendicular. In many of the crania, on account of the pressure, the parietal diameter was nearly as great as the occipito-frontal diameter, and in some cases even greater.

The flattening of the occiput was especially manifest in the crania of children.

When viewed from behind, the skull presents a conical or wedge-shaped outline, the base being wide at the occipital protuberances and at the openings of the auditory canals, from thence to the parietal protuberances almost perpendicular, and sloping from the parietal protuberances to the vertex.

When the skull is laid upon the side and viewed in outline, the base presents a massive compressed appearance, with a shortened antero-posterior diameter and lengthened lateral diameter; and the foramen magnum and glenoid fossa do not occupy symmetrical positions. These peculiarities were evidently the result of artificial pressure rather than of original conformation.

The mode of burial adopted by the aborigines of Tennessee, in stone coffins or chests covered with large flat rocks, effectually preserved the crania from all injury or distortion by the weight of superincumbent masses of earth, and at the same time entirely excluded the roots of plants and trees. It would therefore be absurd to refer the peculiar configuration of these crania to causes acting after death. Any cause sufficiently great to flatten the occiput and alter the relative position of the parietal bones, the foramen magnum, and the glenoid fossa, would surely have been powerful enough to crush and utterly destroy the crania. It is well known that such changes are impossible in the adult cranium, by any exertion of extraneous force, however carefully and continuously applied.

IV. Many of the crania of the stone graves and mounds bear a striking resemblance to those of the Natchez, described and figured in Morton's "Crania Americana."

That the aborigines of Tennessee were probably descended from the Toltecs, and were related to the Natchez, is rendered probable, not only by the configuration of the crania, but also from the history of this once powerful but now extinct nation. A large proportion of the Indian nations inhabiting the present bounds of Florida, Georgia, Alabama, Mississippi, Tennessee, and Arkansas, at the time of the expedition of De Soto, were worshippers of the sun, were governed by hereditary and despotic princes, and were probably either intimately associated in their origin, or had been brought at some remote period under the dominion of the Natchez. This nation, in former times, extended from the river Manches or Iberville, which is about fifty leagues from the Gulf of Mexico, to the Wabash River, which is about four hundred and fifty leagues from the gulf; and it is probable that the Natchez extended up all the rivers which fall into the Mississippi between these two extremes, and included the region of country occupied by the mounds and fortifications.

V. It is impossible to establish, by authentic history, the relations of the stone-grave race of Tennessee with the Natchez, and we do not assert that they were one and the same people, but only that they were most probably closely related in their origin, and may, at some former time, have been subjected to the same form of government, and practised the same or similar religious rites.

VI. The inquiry into the name and history of the ancient race which inhabited, in past ages, the fertile valleys of Tennessee and Kentucky, has been attended with difficulties; and the conclusions must necessarily be stated with caution. Upon many points, only conjecture can be offered. The valleys inhabited by the aborigines of Tennessee and Kentucky, and in fact the entire valley of the Mississippi, has been, for centuries past, the theatre of constant revolutions amongst the aborigines of the soil; wars, conquests, subjugations, extinctions, and productions of new races appear to have marked the life of American as well as of European and Asiatic nations. In order to throw light upon the origin of the monumental remains of the Mississippi Valley, I instituted an extended inquiry into the name and history of the nations formerly inhabiting Tennessee, before the inroads of the Anglo-Americans, and while it was clearly established that the early French and Spanish explorers were acquainted with a numerous and powerful people inhabiting the valleys of the Cumberland and Tennessee Rivers, at the same time I was unable to adduce *absolute* historical evidence to show that this people constructed the stone graves, and filled the caves with their dead. The extended synopsis which I drew up of the observations of the early Spanish and French explorers and historians is too voluminous to be introduced into the present work, and we shall simply present the general results.

The valleys of Kentucky and Tennessee, and more especially the Cumberland valley, were inhabited two centuries ago, by the nation originally called by the early French explorers and missionaries *Chaouanons.* This name has become, by certain vocal changes, Shawnees. The Chaouanons are supposed to have been

identical with the nation called by the Huron missionaries, Eriehonons, or Cats. We are justified by the statements of the early missionaries, explorers, and historians, in supposing the Eries, Chaouanons, Ontoügaunha, Shawnees, Uches, and Savanas, to be the same unfortunate nation whose dominion once extended from the waters of the Savannah River, in the present State of Georgia, to the shores of Lake Erie, and who were persistently followed and relentlessly destroyed by the warlike, cruel, and powerful Iroquois.

The valleys of the Cumberland and Ohio Rivers appear to have been inhabited for a considerable period by the Chaouanons, for in the earliest maps, we find this region called *the country of the Ancient Chaouanons.* The earliest French explorers and missionaries describe this nation as populous and powerful, and their right to the soil as well as their power was acknowledged in the earliest treaties negotiated with the Algonquin tribes by La Salle, nearly two centuries ago. From the earliest period of French occupation in the Mississippi valley, the Chaouanons were, with others of the Algonquin tribes to whom they were closely related by origin and language, firm friends of the French, and were instructed in the Catholic religion as early as two centuries ago, by the Jesuit missionaries. The cross was erected wherever they journeyed, in the wilderness, in the fertile valleys and plains, upon the hills and mountains, along the banks of the rivers, and upon the shores of the great lakes. In the humble wigwams, in the council houses upon the elevated mounds, and within the populous Indian towns, it became a sacred and mysterious emblem and an object of devout and religious worship with the aborigines.

These statements will be illustrated and sustained by the following brief extracts from the monograph which I have prepared, and to which we have before alluded.

Father James Marquette,[1] who set out for the "*Discovery of the Great River, called by the Indians* Mississippi," on the 17th of May, 1673, speaks of the Ohio River as the Ouaboukigou, which finally became Ouabache, or Wabash, a name now applied to the last tributary of the Ohio. "This river," says Father Marquette, "comes from the country on the east, inhabited by the people called Chaouanons, in such numbers that they reckon as many as twenty-three villages in one district, and fifteen in another, lying quite near each other; they are by no means warlike, and are the people the Iroquois go far to seek, in order to wage an unprovoked war upon them; and as these poor people cannot defend themselves, they allow themselves to be taken, and carried off like sheep, and innocent as they are, do not fail to experience at times the barbarity of the Iroquois, who burn them cruelly."

The observations upon the Chaouanons, given in the "Account of the Discovery of some New Countries and Nations in North America, in 1673," by Pere Mar-

---

[1] "Relation of the Voyages, Discoveries, and Death of Father James Marquette, and the subsequent Voyages of Father Claudius Allouez, by Father Claudius Dablon, Superior of the Mission of Jesus in New France, 1678." Discovery and Exploration of the Mississippi Valley, J. G. Shea, pp. 41–42.

quette and Sieur Jolliet, are similar to those just quoted from the "Relation," of Father Claudius Dablon. It is evidently from the statements of Hennepin, who visited the Mississippi River in 1680, that its banks and tributaries were occupied by several populous and powerful nations.

Two maps of the voyage and discoveries of Marquette have been published; the first copied and published by Shea, in his work on the "Discovery and Exploration of the Mississippi Valley," is said to be a reproduction of the original as it came from the hands of the great explorer. The map published by Thevenot in 1681, as Marquette's, differs from the original, not only in certain names of rivers and Indian tribes, but also in the delineation of the course of the Mississippi River.

In the original map of Marquette, the Mississippi River descends only to the Akansea, the limit of his exploration. The map published by Thevenot in his "Recueil de Voyages de M. Thévenot dédié au Roy, Voyage et découverte du P. Marquette et St. Jolliet dans l'Amérique Septentrionale, Paris, 1661," extends the Mississippi River to the Gulf of Mexico.

In the map of Baron Lahontan (which I have carefully examined and compared with the older maps), published in 1705, at Amsterdam, although his voyage of exploration on the Mississippi and Missouri was commenced on the 28th of May, 1699, the course of the Mississippi is not traced beyond the river "Ouabache," or Ohio.

It is thus established by the testimony and maps of Father Marquette and others, that in 1673 the Chaouanons (Shawnees) were a populous nation inhabiting both banks of the Ohio (Ouaboukigou); and that this nation had been engaged for a number of years in bloody and disastrous wars with the Iroquois, who, in consequence of their possession of firearms, were superior to the Chaouanons.

Shea, who translated the "Relation of the Voyages, Discoveries, and Death of Father James Marquette, and the subsequent Voyages by Father Claudias Allouez, by Father Claudius Dablon," gives, in a note on the portion of the work relating to the Chaouanons, some interesting observations, which appear to have been the result of his study of the early French authorities, both printed and in manuscript.[1]

Charlevoix places the final destruction of the Eries by the Iroquois about the year 1655. In his "Histoire de la Nouvelle France" (vol. ii, p. 62), Charlevoix calls the Eries, Chats, and writes the name of this tribe, both Eriez and Eries; and states that the destruction of this nation was so complete that nothing remained but the name which they gave to the great lake upon the borders of which they once lived.

The Andastes, a more formidable nation, are said to have been situated below the Eries, and extended to the Ohio. After many years of disastrous wars, they were finally destroyed in 1672. By a letter of Father Le Moyne's of 1653 (Relacions), the war with the nation of the Eries, or Cat nation, was then newly broken out.

It is scarcely credible that the Iroquois could have utterly exterminated the entire nation. It is more reasonable to suppose that the Eries were a powerful and populous nation, occupying a wide extent of country south of Lake Erie, and that

---

[1] Discovery and Exploration of the Mississippi Valley, etc., by John Gilmary Shea, pp. 41–42.

only the towns immediately on the lake, or for some distance south, were destroyed by their vindictive and powerful enemies. This view must necessarily be held, if it be true, that the Eries, Chats, Cats, Outoügaunha, Savanos, Chaouanons, and Shawnees, were essentially one and the same people, who once occupied the country from the southern border of Lake Erie to the banks of the Tennessee River, and even beyond, to the mouth of the Savannah River.

The Chaouanons (Shawnees) spoke a dialect of the Algonquin language, which was one of the original tongues of the North American continent; and was spoken by every tribe from the Chesapeake to the Gulf of St. Lawrence, and westward to the Mississippi and Lake Superior: the Anakis, Algonquins proper, Montagnais, Ottawas, Nipissings, Nez Percés, Illinois, Miamis, Sacs, Foxes, Mohegans, Delawares, Shawnees, and Virginia Indians, as well as the minor tribes of New England, all spoke dialects of this wide-spread language; the only exception in this vast strip of territory being the Huron-Iroquois language, spoken by the Hurons, Petuns, Neuters, and Iroquois, which is distinct from the Algonquin.

At the time of the explorations of Father Marquette, the Chaouanons, in their home within the basin of the Cumberland River, and along the banks of the Ohio, connected the southeastern Algonquins with those of the west. South, and southwest of the Chaouanons, were the Chickasâs, a warlike and powerful tribe of savages, extending from the banks of the Mississippi eastward, to the mussel shoals of Tennessee River. These tribes were visited by Marquette, and again by La Salle, in his explorations of the lower Mississippi. At first they were the friends of the French, but having been won to the English by traders and emissaries from Carolina, they became most constant and successful enemies of the French colonies in Louisiana.

That friendly relations were established at an early day between the Chaouanons (Shawnees) and the French is evident from the statement made by Father Membré, that La Salle, in 1680 and 1681, not only drew into his interest and united with the Illinois the Outagami chiefs, and detached by presents and arguments the Miamis from the Iroquois; but he also sent presents to the Shawnees and invited them to come and join the Illinois against the Iroquois, who carried their wars, at that time, even to them. La Salle succeeded in uniting these nations before he left the Illinois, on the 22d of May, 1681, and returned to the Missilimakinac. Father Membré thus explains the object of La Salle's effort to combine these nations against the Iroquois: "If we wish to settle these parts, and see the faith make any progress, it is absolutely necessary to maintain peace and union among all these tribes, as well as among others more remote, against the common enemy, that is, the Iroquois, who never makes a real peace with any whom he has once beaten, or whom he hopes to overcome by the divisions which he artfully excites, so that we should be daily exposed to results like that to which we were subject last year. La Salle, convinced of this necessity, has since our return purchased the whole Illinois country, and has given cantons to the Shawnees, who there colonize in large families."

The year 1681, therefore, marks the commencement of the immigration of the

Chaouanons from the banks of the Ohio and Cumberland Rivers to the country of Illinois.

The narratives of the early French explorers contain numerous allusions to the bloody and desolating wars carried on by the Iroquois. Thus, Father Louis Hennepin, in his "Account of the Discovery of the River Mississippi, and the Adjacent Country," says of the Iroquois, "they are an insolent and barbarous nation, and have shed the blood of more than two millions of people in that vast expanse of country." Daniel Coxe, in his "Description of the English Province of Carolina, by the Spaniards called Florida, and by the French La Louisiana, and also of the great and famous river Meschachebe or Mississippi," says, with reference to the Hohio (Ohio) River, "Formerly, divers nations dwelt on this river, as the Chawanoes (Shawnees), a mighty and very populous people, who had about fifty towns, and many other nations, who were totally destroyed or driven out of their country by the *Irocois*, this river being their usual road, when they make war upon the nations, who live to the south and west."

On the valuable map reproduced from the original, and published in the second part of French's Historical Collections of Louisiana, the Chaouanons are represented as inhabiting the banks of the Cumberland River, which is called the river of the ancient Chaouanons. What is now called the Savannah River in Georgia, appears upon this map as the river of the Chaouanons, and a town of the Chaouanons is represented near where Augusta now stands. The Chaouanons are also represented as occupying the country between the two branches of the Alibamou, or Coosa. The position of the Eries, or Chat nation, is also indicated on this map, and, if the Chaouanons and the Eries were the same people, it is evident that the ancient, powerful, and populous nation of the Chaouanons occupied an immense extent of country, reaching from the southern borders of Lake Erie to the mouth of the Savannah River (R. des Chaouanons) on the Atlantic Coast.[1]

Charlevoix's great work, "Histoire de la Nouvelle France," published in Paris in 1744, contains, as is well known, a number of most valuable maps of various portions of North America. Upon his map of the great lakes, the countries formerly occupied by the Petuns, by the Neuter nation, and the Eries are indicated. The large map of Louisiana embraces the entire territory at present occupied by the United States; and upon this chart the region of country between the Ohio and Tennessee Rivers is assigned to the Chaouanons, and the Cumberland River of Tennessee and Kentucky is called "Riviere des Anciens Chaouanons." A village or town of the Chaouanons is marked on the l'Oyo, ou Belle Riviere, directly south of Lake Erie and the country formerly inhabited by the extinct Eries.[2]

In the map of the American Indian Nations adjoining the Mississippi, West and East Florida, Georgia, South and North Carolina, Virginia, etc., published by James Adair, 1775, in his "History of the American Indians," the Cumberland River is called the Old Shuanon River, and the Tennessee, the Cherakee

---

[1] Carte de la Louisiane et du cours du Mississippi, dressé sur un grand nombre de Mémoires, entre autres sur ceux de M. le Maire, Par Guillaume de l'Isle de l'Académie R'le des Sciences.

[2] Hist. de la Nouvelle France, vol. vi, p. 141.

River. The country lying between the Ohio and Wabash Rivers is called "Lower Shawano," and the "Shuanos" are represented as extending up to the headwaters of the Ohio River between the "Alleghany" mountains and Lake Erie.

The series of maps to which we have alluded possesses interest and weight in settling the question of the occupation of portions of Tennessee and Kentucky in former times by the Chaouanons (Shawnees).

The ancient maps of Captain John Smith, in his "Travels, Adventures, and Observations in Europe, Asia, Africa, and America, beginning about the year 1593, and continued to the present, 1629," are interesting, not only for the information which they give, as to the names and location of the tribes of Indians inhabiting Virginia at the time of its discovery, but also for the light which the accompanying illustrations throw on the dress, manners, and weapons of the North American Indians, at the time of the early settlements. It will also be seen from these illustrations that the Indians of that day worshipped idols.

As the destruction of the Adirondacks took place more than two centuries ago, and as the Shawnees removed from the banks of the Savannah before this event, upon careful consideration we have been disposed to place the time of their war with the Cherokees as early as 1640. But we have seen that at this time, and at a later period, they were a powerful and numerous people, inhabiting the Cumberland and Ohio River valleys. These facts also indicate that this people once inhabited or roamed over an immense tract of country extending from the shores of Lake Erie to the mouth of the Savannah River, and even beyond, to the banks of the Sewanee River in Florida; and that pressed on all sides by powerful combinations of various Indian tribes, a portion of the nation, driven from the banks of the Savannah (Showanon) River by the Cherokees, moved northward. This body may have eventually united with their brethren of Tennessee and Kentucky, though they were not the original inhabitants of these States, but only a branch of the nation which extended into Georgia and Florida. Another portion was incorporated into the Creek or Muscogulgee Confederacy; which, according to Bernard Romans,[1] was composed of the remains of the Cawittas, Taleposas, Coosas, Appalachians, Coushacs or Coosades, Oakmulgees, Oconis, Ockbuoys, Alibamons, Natchez, Weetumkees, Pakanas, Taensas, Chacsiboomas, Abekas, and some other tribes; and which, from the testimony of Le Clerc Milford,[2] was formed a considerable time after the invasion of De Soto.

Tradition[3] assigns Florida, and more especially the banks of the Sewanee River, as the former abode of the Chaouanons; and it is well established that from an early date, even before 1638, the Appalachian Indians occupied the neighborhood of this river. The Appalachian Indians appear to have been closely allied to the Uchees, who were once a powerful nation, claiming to be the oldest inhabitants of

---

[1] Concise Natural History of East and West Florida, 1776, pp. 90–91.

[2] Mémoire ou Coup d' Œil rapide sur mes différens Voyages, et mon séjour dans la nation Crëeck. Paris, 1802.

[3] Transactions of the American Antiquarian Society, vol. i, pp. 273–274. Schoolcraft's Notes on the Iroquois, pp. 160–161.

Natural History of East and West Florida, Bernard Romans, 1776, pp. 59, 65, 66, 69.

the soil, and were closely related to, if not identical with, the Chaouanons. It is evident, from the statements of John Lawson, that the Savannas, or Chaouanons, had been subjected to bloody and disastrous wars, and long before had been compelled to undertake various migrations, and that, at the time of his travels, 1700, a large portion of the nation, which had formerly inhabited Florida and Georgia, had removed northward and joined the affiliated Algonquin tribes.

Upon the question of the nature and time of these wars, tradition sheds but dim and imperfect light. Even as late as the travels of Bartram, there were remnants of the Shawnees (Chaouanons) in Georgia, as will be seen from his description of the Uchee Town, esteemed from the antiquity of the people, and their talent and influence, the mother town of the Creek or Muscogulgee Confederacy. Bartram[1] says, "Their own national language is radically different from the Creek or Muscogulgee tongue, and is called the Savanna or Savannuca tongue; I was told by the traders, it was the same as the Shawnese." Col. Benjamin Hawkins[2] says, that the "Village of Sauvanogee on the waters of Coosa and Tallapoosa, is inhabited by Shawnees. They retain the language and customs of their countrymen to the northwest." Bartram[3] thus expresses his views as to the mode in which the great Creek Confederacy arose. This powerful empire or confederacy arose and established itself on the ruins of that of the Natchez. According to the Muscogulgees' account of themselves, they arrived from the southwest, beyond the Mississippi, some time before the English settled the colony of Carolina and built Charleston; and their history concerning their country and people from whence they sprang, the cause of leaving their native land, and the purposes of their migration, is very similar to the account of the Natchez as given by Du Pratz; and they might at one time have been included as allies and confederates in that vast and powerful empire of red men. The Muscogulgees pushing on, and extending their settlements on the northeast border, until the destruction of the Natchez Empire, subjugated the various bands or tribes, which formerly constituted the Natchez, and uniting them with themselves formed a new confederacy. The Muscogulgee tongue became now the national or sovereign language, just as the Natchez tongue had been. Those bands which spoke a different language from that of the Muscogulgee were, without doubt, the shattered remains of the various nations who inhabited the lower or maritime parts of Carolina and Florida, from Cape Fear westward to the Mississippi. In this connection Bartram says: "The Uchees and Savannucas is a third language radically different form the Muscogulgee and Lingo, and seems to be a more northern tongue. I suppose it to be a language that prevailed amongst the numerous tribes who formerly possessed and inhabited the maritime parts of Maryland and Virginia. I was told by an old trader, that the Savannuca and Shawnese speak the same language."[4]

---

[1] Bartram's Travels, pp. 388–9.

[2] Historical Collections of Georgia.

[3] Loc. cit., 464–466.

[4] Bartram's Travels through North and South Carolina, Georgia, and East and West Florida, pp. 464–466. Bernard Roman's Nat. Hist. of East and West Florida, pp. 59–66. Pickett's History of Alabama, vol. i, pp. 81–82.

According to the testimony of the French writers,[1] the Iroquois conquered and incorporated the Satans, Chawanons, or Shawanons, "whom they had formerly driven from the lakes," in their residence on the Cumberland and Ohio Rivers, about the years 1672 or 1664. Governor Pownal, in his "Administration of the British Colonies," says that about 1664, the Iroquois carried their arms as far south as Carolina, and as far west as the Mississippi, over a vast country which extended twelve hundred miles in length and about six hundred in breadth; where they destroyed whole nations of which there are no accounts remaining among the English. The Six Nations claimed the hunting lands of the Ohio River, which included the present state of Kentucky, and a large portion of middle and western Tennessee, at the peace of Ryswick in 1697, in virtue of their conquest from the Shawnees and other nations. In further confirmation of this Indian title, it should be mentioned that Lewis Evans, a gentleman whom Dr. Franklin compliments as possessed of great American knowledge, represents in his map of the middle colonies of Great Britain on this continent, the country on the southeasterly side of the Ohio River as the hunting lands of the Six Nations. In his analysis of his map, he expressly says: "The Shawanese, who were formerly one of the most considerable nations of those parts of America, whose seat extended from Kentucky southwestward to the Mississippi, have been subdued by the confederates (or Six Nations), and the country since became their property."[2]

Dr. Mitchell, who, at the solicitation of the British Board of Trade and Plantations, published a map of North America, which was afterwards used for the adjustment of the boundaries in the treaty of Paris in 1783, observes that "the Six Nations have extended their territories ever since the year 1672, when they subdued and were incorporated with the ancient Shawnese, the native proprietors of these countries."

From the "Natural and Aboriginal History of Tennessee," by John Haywood, published in 1823, and from the "Annals of Tennessee," by Dr. J. G. M. Ramsey, we gathered the following information with reference to the early history of the Shawnees in Tennessee.

The late General Robertson learned from the Indians that, in 1665, the Shawnees occupied the country from the Tennessee River to where Nashville now stands, and north of the Cumberland River; and that, about 1700, they left this country and emigrated north, and were received as a *wandering tribe* by the Six Nations, but were not allowed to have then any claim to the soil. As late as 1764 the Shawnees moved from Green River in Kentucky, where a part of them resided, to the Wabash. In 1772, Little Corn Planter, an intelligent Cherokee chief, narrated that the Shawnees, a hundred years before, by the permission of his nation, removed from the Savannah River to the Cumberland. Many years afterwards the two nations becoming unfriendly, the Cherokees marched against the Shawnees and put a great many of them to death. The survivors then forti-

---

[1] Butler's History of Kentucky, pp. 1–5.

[2] Franklin's Work, vol. iv, 271.

A History of the Commonwealth of Kentucky, by Mann Butler, A.M., 1834, pp. 1–5.

fied themselves, and maintained a protracted war in defence of their possession of the country. At length, the Chickasaws became the allies of the Cherokees, and the expulsion of the Shawnees from the Cumberland valley was gradually effected. This occurred about the beginning of the last century. A few years later, when Monsieur Charleville, in 1714, opened a store upon the land where Nashville now stands, he occupied the fort of the Shawnees as his dwelling. They were then, and had been for several years, so harassed by their enemies, that small parties had been for a long time gradually withdrawing from the country; and their number had become so inconsiderable, that they determined to abandon Cumberland entirely, and afterwards did so. The Chickasaws, hearing of the intended removal of the Shawnees, resolved to strike an effectual blow against them, and, if possible, possess themselves of their stores. For this purpose a large party of Chickasaw warriors posted themselves on both sides of the Cumberland, above the mouth of Harpeth, provided with canoes to prevent escape by water. The attack was successful, all the Shawnees were killed, and their property was captured by the Chickasaws.

The hostilities between these tribes not being brought to a close by any formal treaty of peace, they continued to destroy each other as often as opportunity offered. At length, afraid of meeting each other, all of these tribes wholly forsook the country; and for sixty years it remained not only unoccupied by either, but was seldom visited by hunting parties. In this way when it was first explored and began to be settled by the whites, the whole country west of the Cumberland Mountains was found uninhabited, and abounding with all the wild beasts of the forest. Small parties of wandering Shawnees occasionally infested the frontiers, and from their familiarity with the mountains, the rivers, and the paths leading through the country, were able to inflict serious damage on the infant settlements. A part of the banditti who afterwards infested the Tennessee River, and committed such shocking outrages on emigrants and navigators at the celebrated passes, were Shawnees.

VII. The preceding investigation furnishes data by which we determine that the aboriginal remains of Tennessee are at least more than one hundred and seventy-five years old. Many of the mounds and crania are, without doubt, of great age, but it is certain that no earthworks were erected in this country by the North American Indians, after the beginning of the eighteenth century.

VIII. How long the Chaouanons (Shawnees) occupied the Cumberland Valley, or whether they built the fortifications and pyramidal mounds, and populated the extensive burial grounds with their numerous stone graves, has not been determined by the preceding inquiry. This nation belonged to the Algonquin division of the North American Indians, which, from their traditions appear to have been one of the oldest races of the continent; nevertheless, they were not known to worship idols, or to erect fortifications and pyramidal mounds.

IX. The Chaouanons (Shawnees, Savanas, Savancas, Uchees) formerly inhabited the country along the banks and head waters of the River Savannah, in Georgia. They were a brave and, up to the time of the formation of the Muscogulgee nation, a conquering people, and resisted stoutly the marauding exploration of De Soto.

This portion of the Chaouanon nation was, during its occupancy of northern Georgia and Alabama, involved in several bloody wars; and it was finally defeated and driven northward by the Cherokees. They were closely related to, if not identical with, the Uchees, who claimed to be the oldest inhabitants of the country, and spoke a language different from the Muscogulgee.

In the beginning of 1600, the Chaouanons occupied an extensive tract of country reaching from the southern shores of Lake Erie to the mouth of the Savannah River; and they were subsequently pressed by the Iroquois in the northeast, by the Cherokees and South Carolina Indians in the south and east, and by the Chickasaws on the west. They were finally expelled from the valley of the Cumberland by the Cherokees and Chactaws about 1700–1714.

Through long series of years, the Iroquois pursued the Chaouanons with relentless cruelty, and destroyed immense numbers of this comparatively peaceful and agricultural people. The valleys of the Ohio and Cumberland Rivers were selected by the fierce and cruel Iroquois, as the great highways for the advance of their war parties against the Indian nations of the west and southwest; and thus, by their geographical position, the Chaouanons were subjected to continuous inroads and perpetual wars, and were compelled to abandon the country in large numbers and colonize with the Illinois, as early as the visit of La Salle in 1682. This remarkable people occupied, at an early period, the most conspicuous position among the Indian nations, whose ancient seats were within the present limits of the United States, and established for themselves a more remarkable civil organization, and acquired a higher degree of influence, than any other race of American aborigines, except those of Mexico and Peru.

The Iroquois stood for nearly two centuries, during the period of European colonization, with an unshaken front, against the desolations of war, the blighting influences of foreign intercourse, and the still more fatal encroachments of a restless and advancing border population. After the healing of their internal dissensions, and the formation of the *League*, the Iroquois developed a system of universal aggression, and in their thirst for military glory and political aggrandizement, made the forests of North America resound with human conflicts, from New England to the Mississippi, and from the confines of the Great Lakes to the banks of the Tennessee. With the possession of firearms, received from the Dutch after the discoveries and settlements of 1609–1615, commenced not only the rapid elevation, but the absolute supremacy of the Iroquois over other Indian nations. In 1643 they expelled the Neuter nation from their ancient seat. In 1653 they exterminated the Eries, occupying the south side of Lake Erie. In 1670 they completed the subjugation and dispersion of the Adirondacks and Hurons, and turned their arms against the New England nations. And in 1680, they invaded the country of the Illinois, having previously to this date, ravaged the country of the Chaouanons, and, both before and after this date, having turned their arms against the Cherokees upon the Tennessee, and the Catawbas of South Carolina, and having carried their conquests even to the banks of the Mississippi. It is well established that, for a century at least, the Iroquois were involved in an almost uninterrupted warfare; and, at the close of this period, they had subdued and held in nominal subjection, all

the principal Indian nations occupying the territories which are now embraced in the States of New York, Delaware, Maryland, New Jersey, Pennsylvania, the northern and western portions of Virginia, Ohio, Kentucky, northern Tennessee, Illinois, Indiana, Michigan, and a portion of New England.

In the continual wars, protracted during long periods, we find an explanation of the existence, at the present day, of a portion, at least, of earth walls surrounding the sites of ancient Indian towns, in the valleys of the Cumberland and other southern and western rivers. It is now well established that this mode of protecting these towns and villages by earthworks crowned with stockades was understood and extensively practised by the aborigines, at the time when the first voyagers and adventurers reached this continent, more than three centuries and a half ago.

X. Whilst the preceding facts support the supposition that a portion of the remains of earthworks in Tennessee may have been the work of the Chaouanons, they do not warrant the assertion that the pyramidal mounds, stone sculptures, and curiously fashioned idols, were the work of this people. On the contrary, it would appear that the bloody wars in which this nation was engaged for one century, from 1600 to 1700, and the numerous removals which they were compelled to make, covering a tract of country extending from the Sewanee River of Florida to the shores of Lake Erie, were unfavorable to the construction of large earth pyramids, and sacrificial and burial mounds surrounded by earth and stone walls.

It appears that, when an Indian nation occupied the territory of another whom they had expelled or conquered, they took possession of and occupied the ancient sites of towns.

Thus it is well established, that the Chaouanons did not lose their nationality or their reputation for intelligence and bravery after their expulsion from the Cumberland valley; but continued to exert a powerful influence on the counsels of the surrounding nations; and were renowned alike for their sagacity and bravery. In the war of the Revolution, they inflicted serious damage on the American colonies; and to this day, they retain their name and tribal organization.

The Chaouanons (Shawnees) represented the finest type of the North American Indians. They were noble, generous, and faithful friends; brave, active, and restless warriors; and bitter, dangerous, implacable, and bloody-thirsty enemies. Their great men were true patriots, brave warriors, great leaders, and renowned orators. No nation on the American continent, within the bounds of the United States, Canada, and Russian America, has produced more illustrious names, amongst which may be mentioned, Logan, Cornstalk, and Tecumseh.

XI. It is thus rendered evident that the interior of the American continent has been the theatre of numerous bloody wars and migrations of savage, unlettered nations; and, in the absence of authentic history, it is impossible to assign the monumental remains of Tennessee to any specific date or to any known nation of North American Indians.

It is reasonable to suppose that the Chaouanons occupied only temporarily the sites of the aboriginal towns.

XII. The discovery of undoubted marks of syphilis in the bones of the skeletons included in the stone graves is of importance in its bearing on the history of this

remarkable disease; and tends to sustain the views of those writers who have maintained its American origin

XIII. The mode of burial in stone coffins or cists, practised so extensively by the aborigines of Tennessee, is remarkable, as differing from the methods employed by all the other Indian tribes of North America, of whom authentic records have been preserved.

XIV. The stone-grave race of Tennessee appear to have been idolaters. They carved idols in stone, and fashioned them from a mixture of clay and shells. They appear to have erected altars and offered sacrifice. They painted the emblems of the sun and moon upon high and inaccessible rocks, and carved them on shell ornaments, which were worn suspended on the breast.

XV. The physiognomy of many of their idols is different from that of the nomadic hunting tribes of North America, and resembled more nearly the idols of the Toltecs and their descendants. The head-dresses, as well as the physiognomy of some of these idols, are suggestive of an eastern or Chinese origin.

These relics indicated that this race possessed a considerable talent for sculpture, which might, under favorable circumstances, have led to a high degree of perfection in the art.

The artistic skill of this extinct race was also displayed in the perfection and beauty of their culinary and sacred vessels, fashioned in the form of men and animals, and in their warlike implements, constructed with the most perfect symmetry from the hardest material.

XVI. The presence of large sea-shells of various species, in great numbers, in the stone graves, indicates that this race either had commercial relations extending to the shores of the Atlantic, the Gulf of Mexico, and the Pacific; or that these shells had been preserved in their migrations from remote regions. This conclusion is sustained also, by the representation of certain Mexican and Central American birds and animals on their pipes and culinary vessels, and by the use of obsidian, fluor-spar, and serpentine in the construction of their idols and warlike implements.

INDEX.

Abandonment of settlements by aborigines, 88
Aboriginal nations, remains of the Mississippi valley are referred to various, 39
remains, localities where found in Tennessee, 104
collection of, at State Capitol at Nashville, Tennessee, 139
destruction of, 82
of Kentucky, Tennessee, etc., abandonment by primitive inhabitants of, 88
near Pulaski, Giles Co., Tennessee, 108
rock paintings, 137, 138
settlement occupied the hill upon which is residence of Col. Overton, 39
town, remains of, on Cherry Creek, White Co., Tenn., 133, 134
Aborigines, Bryan Edwards on excessive sensuality of West Indian, 67
of America, burial modes practised by the, 7–35
of America, diseases and pestilences among, 89–99
of Tennessee, origin of, 120
resemblance of crania of, to those of Natchez, Toltecs, and Peruvians, 120, 121
wigwams of, 38
Acajetl, an aromatic substance of the Mexicans, 27
Acolhuan nation, burial customs of the, 28
Adair, James, on burial customs of the Cherokees and Chactaws, 17
on ravages of smallpox, 97
states that the Chactaws practised head-flattening, 122
Adirondacks, destruction of the, 152
Alabama, reference made to Pickett's History of, 14
Alesco, cow-pox in, 96
Alibamo, numerous population in, 105
Alibamons, burial customs of the, 33
Altar from centre of mound opposite Nashville, Tenn., 42
in centre of burial mound on West Harpeth River, Tenn., 81
in mound at Oldtown, Tenn., 86
in oblong mound near Franklin, Tennessee, 57
-like surface in mound on West Harpeth River, Tenn., 80
Anahuac, Aztecs took possession of, 120, 132
cross in temples of, 78
temples of, terra cotta heads from, 120
Angelopoli, deaths from smallpox in, 95
Animals, bones of, in graves, 49
Apoplexy common among people practising head flattening, 124
Aqueducts within inclosure near Paris, Tennessee, 131
Ardune, Joannes ab, respecting syphilis, 69
Arica, mummies exhumed near, by Dr. Ruschenberger, 33
Arickarees, smallpox ravages among, 97
Arkansas, burial customs of the, 17, 33
Arrow-heads from Oldtown, Tenn., 87
found around mounds on Cumberland River, Tenn., 49
found in alluvial plains around the burying ground opposite Nashville, Tenn., 7
found in graves at Floyd's Lick, Tenn., 12
Arrow-heads found in mound in North Nashville, Tenn., 50
found in mound opposite Nashville, Tenn., 46, fig. 12
found in Tennessee illustrate condition of former inhabitants, 1
from ancient work near Franklin, Tenn., 76
from fields in valley of Duck River, Tenn., 103
Ashes in mound at Oldtown, Tenn., 86
in mound on north bank of Holston, Tenn., 4
of Mexican Kings deposited in Chapoltepec, according to Solis, 27
paintings, caves, mounds, and charcoal, connection between, 4
strata of, on river bank near mounds on Cumberland River, Tenn., 49
under stone piles near Stone Fort near Manchester, Tenn., 55, 103
within sacrificial vase or altar from centre of mound opposite Nashville, Tenn., 42
Assinniboins, smallpox ravages among, 97
Astruc, John, reference made to, 70
Atacapos—inhabited coast at the mouth of Mississippi—antiquity of, 122
Ataruipe, Humboldt on cavern and mummies of, 31, 32
Ataxique, fever in the tropics, 90
Atures, burial customs of the, 33
Atwater, Caleb, quotes Mr. Clifford respecting the coverings of mummies, 5
on image from tumulus, near Nashville, Tenn., 52
reference made to, in Archæol. Americana, 140
Axes from Oldtown, Tenn., 87
battle, from Tennessee, 46, 140, 142, fig. 11
copper, found in Peruvian graves, 30
Aztec sculpture, image found in mound opposite Nashville, Tenn., resembles, 44
Aztecs took possession of Anahuac, 120, 132

Bancroft, Dr. Edward N., Essay on Yellow Fever by, 93
Baraguan, Straits of, caverns in, 31
Barbadoes, Dr. Henry Warren on introduction of yellow fever in, 93
Bartram describes height of graves, 9
on burial customs of Chactaws, 17
on head-flattening among the Chactaws, 122
Baskets in which human remains in cave at Warren County, Tennessee, had been interred, 2, 3
Bastions, semi-circular, of the ditch on north bank of the Holston, Tenn., 4
Beads, bone, from Tennessee, 137
inclosed in coffin in saltpetre cave, Warren Co., Ky., 5
used as ornaments of bodies in mound opposite Nashville, Tenn., 42, 43, 45, fig. 6
Beckett, William, respecting syphilis, 68
Bellknap's Life of Gorges, reference made to, 91
Biddle, Charles, brought mummy of Muysca Indian to National Academy of Science at Philadelphia, 32
Big Harpeth River, Tenn., ancient works on, 79–99
celt from, 142
chain of fortified ancient towns on, 36

Big Harpeth River, Tenn., combination of works along, 36
cranium from burial mound on, 111
earth works on, 56–78, fig. 23
extensive collection of stone graves on, 8
rock-painting on, 138
Big Tennessee River, mounds on banks of, 36
Bimeda, Luis De, recorded the history of John Ortiz, 13
Birds, bones of, in graves, 49
painted on limestone bluff forming south bank of the Holston, Tenn., 4
Black Bird, grave of, Chief of the O-ma-haws, on the Upper Missouri River, 25
Blackfeet, smallpox ravages among the, 97
Bledsoe's Lick, Tenn., remains at, 104
Boiling Springs, Tenn., stone graves at the, 8
idol from stone grave at, 132
Bone beads from Tennessee, 137
Bones, charred, found under stone heaps near Manchester, Tenn., 55
deposit of human, near residence of Major John F. Jewett, near Livingston, Tenn., 12
found by Dr. Zach. R. Chowning, near Livingston, Tenn., 12
found in cave on Duck River, Tenn., 102
from mound in a work in Henry County, Tenn., 131
from Rock Mound near Pulaski, Tenn., 109
human, found in caves in Tennessee, 1
human, in stone graves at Sycamore, Tenn., 55
in mound on French Lick Creek, near Nashville, Tenn., 51
of birds and animals found in graves of children, opposite Nashville, Tenn., 49
of child in grave near Franklin, Tenn., 72
Brazil, Coroados of, burial customs of the, 33
inhabited by Caribs, 122
smallpox in, 96
Spix and Martin's travels in, 33
yellow fever in, 93
Brentwood, Tenn., small mound near, 37
stone graves in and around, 8
Brown, Dr., found stone images near mound below Charlottesville, Tenn., 133
Thomas, at Oldtown, Tenn., ancient works and stone graves on place of, 8, 82
Buffalo Gap, Tenn., rock-painting at, 138
Burial caves in Tennessee, 1–6, Chapter I.
customs of southern Indians at time of De Soto's invasion, 13
ground near fortification near Carthage, Tenn., 3
opposite Nashville, Tenn., on bank of Cumberland River, 7, 8
in box or coffin, origin of, 34
manner of, by the ancient race in Tenn., 8
mode of, in cave on Smith's Fork, Tenn., 3
modes practised by the aborigines of America, 7–35, Chapter II.
mounds, apparent royal, contain but a few small graves, 9
near Brentwood, Tenn., 41
near inclosure on West Harpeth River, Tenn., 80
on Cumberland River, 41
stone grave, 37
remarks on methods of, 146

Caciques of Quito were buried in the principal temple, 30
Cafeque, Georgia, supplied servants to De Soto, 105
Cairo, cave 22 miles above, on Cumberland River, 3
California, smallpox among Indians of, 96
Canadian Indians, burial customs of the, 34
Caney Fork River, Tenn., remains on, 104
Canteen, Indian, from Mr. Dixon's farm on White Creek Road, Tenn., 54
Capac, Huayna, corpse of, seen by Garcilasso, 29
Caribs, burial costumes of the, 33
flattening of skull among the, 121
Caribs, reference to Sir W. Young's account of the, 33
Caribbees, see Caribs, 121, 122
Carter, Dr., visited rock paintings in Mound Bottom, Tenn., 138
Carter's Creek, mound on junction of Rutherford's and, 107
Carthage, Tenn., cave near Cumberland River, 12 miles below, 3
Carthagena, vomito in, 94
Castalian Springs, Tenn., aboriginal remains at, 104
Catlin, account of burial customs of Mandans, 23, 24
ascribes fortifications on Muskingum and Ohio Rivers to the Mandans, 38
describes grave of Black-Bird, Chief of the O-ma-haws, on Upper Missouri River, 25
gives drawings of heads of Osages, 124
on destruction of Indians by smallpox, 97, 98
on wigwams of Mandans, 38
Cattaraugus, Senecas resided at, 15
Caucasian crania, measurements of, 47
skulls, internal capacity of, 114
Cave near Pulaski, Giles Co., Tenn., on plantation of Mr. William Sheppard, 3, 108
of Miztica Baxa, cross from, 78
on Duck River, Tenn., 102
on Holston River near Strawberry Plains, in Knox Co., Tenn., idol from, 128
on south bank of Holston, Tenn., opposite the mounds, 4
twelve miles below Carthage, Tenn., near Cumberland River, 3
Caves and mummies of Ataruipe, Humboldt on, 31, 32
burial, in Tennessee, 1–6
mounds, charcoal, ashes, and paintings, connection between, 4
Cayambe, plains near, covered with tombs, 30
Celt, chipped, from stone grave in Cumberland Valley, Tenn., 139, fig. 76
from Cumberland Valley, Tenn., 142, figs. 82, 83
from Middle Tennessee, 142
from mound in Nashville, Tenn., 51, fig. 20
from Oldtown, 87, fig. 55
of jasper from bed of Seine at Paris, 58
purpose of European stone, 58
stone, from bed of Thames at London, 58
Cemetery at Mr. Macgavoc's, near Nashville, Tenn., 11
Cempoala, smallpox in, 94
Central America, shores of, inhabited by the Caribs, 122
smallpox in, 96
Ceremonies at burial of a Mexican king, 27
at death of female chief of Natchez, Father Charlevoix's account of the, 20, 21
religious, of aborigines, at De Soto's time, 106
Chactaws, burial customs of the, 16, 17, 18, 19
have a game called Chunké, 141
head-flattening among the, 122
ravages of smallpox among, 97
Champlain's explorations of Maine, 107
Chapoltepec, ashes of Mexican kings, according to Solis, deposited in, 27
Charaibes. *See* Caribbees, 122
Charcoal and ashes in stone graves at Sycamore, Tenn., 55
ashes, paintings, caves, and mounds, connection between, 4
at Oldtown, Tenn., 86
found in mound on French Lick Creek, near Nashville, Tenn., 51, 52
in mound on north bank of Holston, Tenn., 4
in mound on West Harpeth River, Tenn., 80
strata of, on river bank near mounds on Cumberland River, Tenn., 49
under stone piles, near Stone Fort, near Manchester, Tenn., 103
Charlevoix, Father, account of ceremonies at death of female chief of Natchez, 20, 21
on burial customs of the Canadian Indians, 34
Charlotte Turnpike, near Nashville, Tenn., graveyard near, 8

Charlottesville, Tenn., Dr. Brown found images near mound below, 133
Cherokees, and Chickasaws drove Shawnees from Cumberland, 51
are said to have painted figures on limestone bluff, forming south bank of the Holston, Tenn., 4
burial customs of the, 17, 18, 19
ravages of smallpox among, 97
stockaded mound on French Lick Creek near Nashville, Tenn., 52
Cherry Creek Valley, Tenn., Dr. E. L. Gardenhire on mound in, 12
remains of aboriginal town in, 133, 134
Cheyennes, smallpox among the, 98
Chica, guaqueros for drinking, found in Peruvian tombs, 31
Chichimecs, sepulchres of the ancient, 28
Chickasa, numerous population in, 105
Chickasaws and Cherokees drove Shawnees from Cumberland, 51
Capt. Bernard Romans on the burial customs of the, 16
ravages of smallpox among, 97
Child's grave in earthwork near Franklin, Tenn., 60, 72
Chili, Indians of, burial customs of the, 33
Chillicothe, Ohio, cross found in mound at, 77
phallus or priapus from, 135
Chimu, ruins of city of, visited by Humboldt, 31
Chinese and Mexicans, ornaments and head-dresses of Tennessee stone-grave race resemble those of, 72
Tae-heih, 137
Tartary, burial customs in, 118
Chinooks, flattening of cranium among, 121
method employed by, in flattening the head, 123, fig. 64
Chippeways, burial customs of the, 34
Chisel, flint, from mound in North Nashville, Tenn., 50, fig. 50
from earthworks on Big Harpeth River, 75, figs. 39, 40
from fields in valley of Duck River, Tenn., 103
from Oldtown, Tenn., 87
stone, in grave near Franklin, Tenn., 61
Choctaws. *See* Chactaw.
Chokta. *See* Chactaw, 17, 18, 19
Cholula, pyramids of, 28, 120, 132
stone idol from pyramid at, 132
Chowning, Dr. Zach. R., found bones near Livingston, Tenn., 12
Chunké, a Chactaw game, 141
Cieca on compression of skull, 119
Cinders found in mound on French Lick Creek, near Nashville, Tenn., 51, 52
Cists. *See* Stone Coffins, 7
Clarkesville, Tenn., image from mound near, 133
Clavigero, account of funeral rites and sepulchres of the Mexicans, 25
reference made to History of Mexico, 25, 33
respecting syphilis, 68
statistics of deaths from smallpox, 94, 95
Clifford, Mr., of Lexington, Ky., image from tumulus near Nashville, Tenn., in museum of, 52
quoted by Caleb Atwater respecting the coverings of mummies, 5
Clifton, Perry Co., Tenn., image from mound near, 131
Clothing of the deceased Mexicans, 25
Cockrill's Spring, near Nashville, Tenn., Indian burying-ground at, 8
Coffins, stone, from mounds near Franklin, Tenn., 57
in saltpetre cave in Warren County, Kentucky, 5
used by ancient race of Tennessee, 7
sounding for the, in stone graves in Tennessee, 9
use of, a distinction of ancient race in Tennessee, 34
wooden, in mound at Stone Fort, near Manchester, Tenn., 102
Coins from Tennessee, 140
Colchis, near Pontus, customs of inhabitants of, 16
Collins River, Tenn., remains on, 104
Color of skin of body found in limestone cavern in Kentucky, 5
Combahee River, South Carolina, 104
Compression, artificial, of crania from mound opposite Nashville, Tenn., 48, 49, 54
of cranium, custom of, 119, 121, 123
Cone of hæmatite from Cumberland Valley, Tenn., 141, fig. 81
Coosa, numerous population in, 105
Copper axes found in Peruvian graves, 30
crosses found in graves in Tennessee, 35, 137
or plates in grave near Franklin, Tenn., 59
mask found in mound near Franklin, Tenn., 45
ornaments found in mounds in Tennessee, 45, 136, fig. 10
from graveyard on farm of Col. W. D. Gale, near Nashville, Tenn., 8
Copperas Cave, West Tennessee, bones found in, 1
Cordillères, Vues des, reference made to, 29
Cordova, Gonzales Fernandez de, soldiers of, spread syphilis, 68
Coroados of Brazil, burial customs of the, 33
Cortez describes burial customs of Mexicans, 28
Cowpox in Valladolid and in Alesco, near La Puebla, 96
Coya Mama Oello, corpse of, seen by Garcilasso, 29
Craighead, Mr., image found near residence of, 133
Crania Americana, Dr. Morton's, 32, 33, 47
effects of pressure upon, at different ages, 48, 49, 54
found by Mr. Lane, doubtless belonged to children, 11
in small graves prove to be those of children, 9, 13
from graves on Mr. Dixon's farm on White Creek Road, Tenn., 54
from mound near Brentwood, Tenn., peculiarities of, 38
from outer circle of coffins in mound opposite Nashville, Tenn., 46, 47, figs. 13, 14
from stone graves at Oldtown, Tenn., 84, 85, 86
from tumuli at Kertsch in the Crimea, Dr. Rathke on, 118
measurements of, from stone graves and mounds of Tennessee, 110
of Kentucky and Tennessee stone-grave race resemble those of Inca Peruvians and Toltecs of Mexico, 72
of skeletons from mound opposite Nashville, Tenn., 44
resemblance of, of aborigines of Tennessee, to those of the Natchez, Toltecs, and Peruvians, 120, 121
remarks on and comparison of, 146
Craniograph, description of, 112, fig. 63
Creeks, burial customs of the, 16, 33
Crimea, Dr. Rathke on crania from tumuli at Kertsch in the, 118
Cross carved in shell ornament from stone grave near Nashville, Tenn., 77
in mounds at Chillicothe, Ohio, 77
stones forming, reverenced by Mexicans at time of Spanish conquest, 77
in temples of Anahuac, 78
use of, among nations of remote antiquity, 77
Crosses found in mounds and graves, 77
of copper from grave in earthwork near Franklin, Tenn., 59, 137, fig. 35
in graves in Tennessee, 35
Crows, smallpox ravages among, 97
Cuba, customs of ancient inhabitants of, 122
Cuitlahuac died of smallpox, 94, 95
Cumberland River, above Nashville, remains along, 104
cave, 22 miles above Cairo, on, 3
flagon in open temple on Caney Fork of, 134
graves along bank of, 48, 49
mounds on banks of, 36
stone idols found in the valley of the, 129, 132
Valley, celts from, 142
cranium from mound in, 110, 111

Cumberland Valley, pipes found in, 75
Cup, drinking, from grave near Brentwood, Tenn., 41, fig. 3
from stone grave in valley of Cumberland River, Tenn., 51
Cushman, Elder, on pestilence among Indians, 91
Cutifachiqui, gentleman of Elvas on depopulation of, 90, 91
pearls found by Spaniards in grave in province of, 14
Cuzco, royal mummies found at, 29

Daubenton on the foramen magnum, 116, 117
Davis, Francis, reference made to China, 137
Squier and, mention stone work near Manchester, Tenn., 100
Dead, mounds for burning the, 36
Death of a Mexican king, ceremonies at the, 27
De Azara, reference made to Voyage dans l'Amérique, 33
De Atyllon visited South Carolina, 104
Deities of aborigines, 106
Delawares, burial customs of the, 34
Dermes, Capt., reported plague along the Atlantic, 91
De Soto, expedition of, to Florida, 105
invasion of, burial customs of southern Indians at time of the, 13
noticed Indians in the south wear feather mantles, 2
recorded history of John Ortiz, 13
Destruction of nations, 99
of aboriginal remains, 82
of entire population of primitive inhabitants of Kentucky and Tennessee, 88
of the Adirondacks, 152
Dickinson's Turnpike, Tenn., stone graves on, 8
Disk, stone, from ancient work near Franklin, Tenn., 74, 75, fig. 37
from Valley of the Cumberland, 51, fig. 19; 143, fig. 81
of clay from stone grave, Nashville, 50, figs. 17, 18
Discoidal stone from ancient work near Franklin, Tenn., 74, fig. 36
Diseases among aborigines of America, 89–99
in Tropics, Humboldt on, 94, 96
of West Indies, Sir Hans Sloane, M.D., on Natural History of, 68
Ditch inclosing mounds on north bank of the Holston, Tenn., 4
of stone fort near Manchester, Tenn., 101
of work on West Harpeth River, Tenn., 80
Ditches probably inclosed consecrated ground, 4
recorded by De Soto, 105
Dixon, Mr., crania from graves on farm of, 54
stone graves near Nashville, Tenn., on farm of, 53
Dobrizhoffer on burial customs of the Patagonian tribes, 33
Dodinæus, respecting syphilis, 68
Doe-skin employed as shroud of human remains from cave in Warren County, Tenn., 2
Dog Creek, Tenn., aboriginal remains at mouth of, 104
Duck River, burying-grounds along, 8
fortification on, 100
mounds on banks of, 36
pipes found in, 75
Dunlap, R. E., on inclosure near Paris, Tenn., 131
John W., certifies as to inclosure near Paris, Tenn., 131
Dupaix on antiquity of Palenque ruins, 77
Du Pratz, information of the extent and power of the Natchez, 125, 126, 127
on compression of skull among Natchez, 121
reference made to his History of Louisiana, 141, 145

Earle, Mr., examined mounds in Nashville, Tenn., 51
Earthenware vessels from Tennessee, 144, 145
deposited with skeletons from burial-ground near Carthage, Tenn., 3
Earthenware vessels in octagonal grave in mound of earthwork near Franklin, Tenn., 59
Earthworks, ancient, near Hickman, Tenn., 63
ancient, at Oldtown, Tenn., 82, fig. 47
fortifications, and mounds in Tennessee, 36–55, Chapter III.
on Big Harpeth River, Tenn., 56–78, Chapter IV., fig. 23
on plantation of Gen. de Graffenreid in Tennessee, near Franklin, 8
on West Harpeth and Big Harpeth Rivers, Tenn., 79–99, fig. 46
remains of ancient, around mound near Brentwood, Tenn., 37
surrounding mounds, 36
traces of ancient, on Mr. Dixon's farm, on White Creek Road, Tenn., 54
Eastand, Capt., ploughed up flint glass within stone fort near Manchester, Tenn., 101
Edwards, Bryan, History of the West Indies, 34, 121
on excessive sensuality of West Indian aborigines, 67
Egypt, cross was the symbol of matter in, 77
Egyptian vase, image found in mound opposite Nashville, Tenn., resembles, 44
Egyptians consecrated the phallus, 136
originated burial in box, or coffin, 34
Elk River, Tenn., burying-grounds along, 8
mounds on banks of, 36
Elvas, gentleman of, on depopulation of town of Cutifachiqui, 90
recorded history of John Ortiz, 13
Embalming of body of Zapotec lords, 28
Embankment, circular, on West Harpeth River, Tenn., 79
on plantation of General M. F. de Graffenreid, near Franklin, Tenn., 56
Emigration a cause of abandonment by primitive inhabitants of Kentucky and Tennessee of aboriginal remains, 88
England, burial practised by ancient inhabitants of, 34
Entrenchments recorded by De Soto, 105
Erie, skeletons of small people found in ancient mounds near, 10
Ethiopian crania, measurements of, 47
skull, internal capacity of, 114
Ethnological Society, reference made to Trans. of Amer., 12, 136
European stone celts, purpose of, 58
Evans, Lewis, on the Six Nations, 154
Excavation of ancient Indian pyramid of Cholula, Mexico, 28, 29
within inclosure on West Harpeth River, Tenn., 80

Falkner's Patagonia, reference made to, 33
Fan in hand of mummy from cave in Warren County, Tenn., 2
Fayette Co., Mississippi, stone vessel from mound on Tallahatchie River, 144
Feather mantles, 2
Feathers inclosed in coffin in a saltpetre cave, Warren Co., Ky., 5
Female chief of the Natchez, ceremonies at death of, Father Charlevoix's account of, 20, 21
Fire, traces of, in mounds of earthwork near Franklin, Tenn., 57
Fishes painted on limestone bluff forming south bank of the Holston, Tenn., 4
Flagon from Caney Fork of Cumberland, Tenn., 134
Flatheads of Columbia River compress their cranium, 123
Fleshing instrument from stone grave within ancient work near Franklin, Tenn., 75
Flint chisel from mound in North Nashville, Tenn., 50
splinters of, in fields near mounds on Cumberland River, Tenn., 49
Florida, Indians in, wore feather mantles at the time of De Soto's march through the south, 2

Florida, burial customs of, at time of John Ortiz, 13
reference made to Roman's History of, 33
temple in, found by Narvaez, in which were chests containing a body each, 14
Floyd's Lick, Jackson Co., Tenn., ancient fortification, mounds, and graves at, 12
Foramen magnum, observations on, 116
Forest within embankment on West Harpeth River, Tenn., 79
Forked-deer River, Tenn., remains on, 104
Fort, stone, near Manchester, Tenn., 37
Fortification along Big Harpeth River, Tenn., below Oldtown, Tenn., at Mound Bottom, Tenn., and on Osborn's Place, Tenn., 36
ancient, mounds, and graves at Floyd's Lick, Jackson Co., Tenn., 12
ancient, near Franklin, Tenn., 8
in Coffee Co., Tenn., 100
mounds, and earthworks in Tennessee, 36–55
mounds in neighborhood of, which mark the sites of ancient towns, 36
of Mandan towns, 38, 39
recorded by De Soto, 105
Foster, Mr., reference made to his obs. during voyage around the world, 33
respecting syphilis, 68
Fracture in skull found in limestone cavern in Kentucky, 5
France, burial practised by ancient inhabitants of, 34
Franklin Pike, near Nashville, Tenn., pyramidal mounds near, 52
Franklin, Tenn., ancient fortifications near, 36
copper mask found in mound near, 45
cranium from stone grave near, 111
stone graves and earthwork on plantation of Gen. de Graffenreid, near, 8, 56
Freeman, Dr., removed cranium from stone grave at Oldtown, Tenn., 85
French Broad River, Tenn., mounds on bank of, 36
mounds five miles above mouth of the, 4
remains on, 104
French Lick Creek, Tenn., mound near, 51
Funeral of Mexican king, ceremonies at the, 27
rites and sepulchres of the Mexicans, description of, by Clavigero, 25

Gale, Col. W. D., copper ornaments found in grave at residence of, 45
graves opened on farm of, 3 miles from Nashville, Tenn., 8
image from grave near residence of, 41
Galinazo, looking-glasses of, found in Peruvian tombs, 30
Garcilasso describes corpses of the Incas, 29
on construction of Peruvian tombs, 30
on royal mummies found at Cuzco, 29
Gardenhire, Dr. E. L., on mounds in Cherry Creek Valley and Indian graves near Sparta, White County, Tenn., 12
Gateway of Stone Fort near Manchester, Tenn., 37
Gerdenio, Bernardus de, respecting syphilis, 69
Gili, Missionary, describes burial customs, 32
Girdle of silver around waist of female body from cave near Carthage, Tenn., 4
Glass. *See* Eastand.
Goat Island, Niagara Falls, excavations at, 34
Gold found in graves of Mexicans, 28
Golgothas of the Mandans, 24
Gomara mentions crosses in Yucatan, 78
on Mexican burial customs, 25
Gookin, Historical Collections, references made to, 91
on pestilence among Indians, 91
Graffenreid, Gen. de. *See* Franklin.
Grant, Dr. J. T., explored cave near Pulaski, Tenn., 108
Graves at Floyd's Lick, Jackson Co., Tenn., 12
along bank of Cumberland River, Tenn., 48, 49
Graves around octagonal grave in earthwork near Franklin, Tenn., 59, 60
near Brentwood, Tenn., 41
on hill upon which Col. Overton's residence in Tennessee, 39
small, square, in Tennessee, 9, 13
stone, at Sycamore, Cheatham Co., Tenn., 55
in burial mounds, 37
in mound near Brentwood, Tenn., 37
in Tennessee, 8
in vicinity of mound on Franklin Pike, near Nashville, Tenn., 52
with human remains found in Tennessee, 1
within work at Oldtown, Tenn., 82
Graveyard, ancient, on White Creek Road, Tenn., 53
Graveyards, extensive, in Kentucky and Tennessee, 7
Greeks buried their dead in boxes, 34
Grenada, burial customs of Indians of New, 33
Guaca de Toledo visited by Humboldt, 31
Guaqueros. *See* Chica.
Guaxaca, deaths from smallpox in, 95
Guiana, customs of some hordes in, 31

Hæmatemeses in the tropics, 90
Hair of body from limestone cavern in Kentucky, 5
of mummies from cave in Warren County, Tenn., 2
Hammers from Oldtown., Tenn., 87
Hartsfield, Solomon, image found in Henry Co., Tenn., on land of, 130
ploughed up image near Paris, Tenn., 131
Hatchet, stone, found around mounds on Cumberland River, Tenn., 49
found in mound opposite Nashville, Tenn., 46
from ancient work near Franklin, Tenn., 75 fig. 38
from fields in valley of Duck River, Tenn., 103
from grave at Nashville, Tenn., 7
from Oldtown, Tenn., 87
iron, from mound on Franklin Pike, near Nashville, Tenn., 52
Hatchy River, Tenn., remains on, 104
Havana, vomito in, 94
Haysborough, Tenn., graveyard at, 8
Haywood, account of ancient pigmies, 10, 13
describes fortification near Manchester, Tenn., 100
on images from Sumner and Roanoke Counties, Tenn., 133
relates finding human bones in caves, 1, 3, 4, 5, 10
respecting mound in Nashville, Tenn., 51
History of Shawnees, 154
on the lingam of India, 134
on rock painting, 138
reference made to, Aboriginal History of Tennessee, 35, 77, 140, 142
Hazard's Collections, reference made to, 91
Hazolteotl, dress of an executed Mexican adulterer, 25
Head-dresses of images of Tennessee stone-grave race resemble those of Chinese and Mexicans, 72
Head-flattening. *See* Compression.
Heads of pottery from Tennessee, 63, figs. 31, 32
Herrera mentions ancient monuments near Zenu, in Venezuela, 33
on altering of skull by ancient inhabitants of Hispaniola, Cuba, Jamaica, and Porto Rico, 122
on burial customs of Mountain Indians, 33
Hiawassee River, Tenn., mounds on banks of, 36
ancient town site above mouth of, 131
Hickman. *See* Kentucky.
Hieronymus Fracastorius, reference made to, 70
Hillary, Dr., on yellow fever in Barbadoes, 93, 94
Hippocrates mentioned macrocephali, 118
Hispaniola, customs of inhabitants of, 122
Hoe from Cumberland Valley, 140, fig. 79
Holston River, Tenn., mounds on north bank of the, 4
near Strawberry Plains, Knox Co., Tenn., idol found in cave on, 128
Hood, General, stone graves exposed during the war by, 52
Howard, Mr., Remains of aboriginal town on land of, 134

Huaca, tomb of Peruvians called, 30
Huayna Capac, corpse of, seen by Garcilasso, 29
Hughes, J. R., circular embankment on his land on West Harpeth River, Tenn., 79, 86
Huitzilopochtli, mask put on face of his image, in case of Mexican king's sickness, 26
reference to in Mexican burial, 25
Humboldt, A. von, on cavern and mummies of Ataruipe, 31, 32
on diseases of tropics, 94, 96
reference made to political essay on kingdom of New Spain by, 28
remarks on Matlazahuatl, 89, 90
visited Guaca de Toledo, 31
visited ruins of city of Chimu, Peru, 31
Hungary, burial customs in, 118
Huns, burial customs among the, 118
Hunter, John D., on syphilis among the Indians, 71
Hurons, burial customs of the, 14
Hutchinson on pestilence among Indians, 91

Idioms of Nootka Columbians, 124
Idols found in the valley of the Cumberland River in Tennessee, 129, 133
from pyramid of Cholula, near Mexico, 132
from stone grave at Boiling Springs, Williamson Co., Tenn., 132
Huitzilopochtli and Tezcatlipoca, masks put on faces of, in case of Mexican king's sickness, 27
of basalt found in ancient pyramid of Cholula, Mexico, 29
small black, from graveyard on farm of Col. W. D. Gale, near Nashville, Tennessee, 8
Illinois, burial customs among the, described by Mr. T. Gale, 15
rock paintings in, 138
Image found in mound near Nashville, Tenn., resembles that found by Prof. Pallas in Russia, 52
from grave near residence of Col. W. D. Gale, near Nashville, Tenn., 41, fig. 5
from Henry Co., Tenn., 130
from mound at Mayfield Station, Tenn., 133
from mound near Clifton, Perry Co., Tenn., 131
from mound on Cherry Creek, White Co., Tenn., 134
from stone grave near Brentwood, Tenn., 41, fig. 4
from tumulus near Nashville, Tenn., 52
in child grave in earthwork near Franklin, Tenn., 61
ploughed up by Mr. Hartsfield near Paris, Tenn., 131
small black, exhumed from grave in mound opposite Nashville, Tenn., 44, fig. 9
Images, clay and stone, from the mounds and stone graves in Tennessee, 4, 128–136, figs. 66–72
from ancient work near Franklin, Tenn., 76, figs. 44, 45
from cave near Pulaski, Tenn., 108, fig. 61
from Smith County Tenn., 135
from Sumner and Roanoke Counties, Tenn., 133
Implements buried with the dead in Tennessee, 8
found near stone fort, near Manchester, Tenn., 101, 102
from Big Harpeth and Cumberland River Valleys, 143, 145
from rock mound near Pulaski, Tenn., 108
of European manufacture not found in mounds on Cumberland River, Tenn., 50
of stone found in alluvial plain around the burying-ground opposite Nashville, Tenn., 7
stone, from Tennessee, 141
stone, in fields near mounds on Cumberland River, Tenn., 49
Inca Peruvians, peculiarities of skulls of, 119
resemblance between crania of Kentucky and Tennessee stone grave race and those of, 72
Incas, civilization of the, essay by Prescott, 29
corpses of, described by Garcilasso, 29, 33
sacrifices on occasion of death of the, 30
Inca-stone, looking-glasses of, found in Peruvian tombs, 30
India, Haywood on the lingam of, 134
Indian grave-yard, Nashville, Tenn., built over, 7
graves in vicinity of Sparta, Tenn., Dr. Jas. H. Snodgrass on, 12, 13
of New Granada, mummy of a Muysca, 32
Indians, burial customs of southern, at time of De Soto's invasion, 13
of California, smallpox among, 96
of Canada and New England, pests among, 90
of New Grenada, burial customs of, 33
of North America, Dr. Rush's inquiry into the Natural History of Medicine among the, 67
of North Carolina, John Lawson, account of burial customs of, 22, 23
pursuits of, 104
reference to Catlin's North American, 24
Ingram's Manual, reference made to, 34
Inoculation, 96
Irish, cross was symbol of knowledge among, 77
Iroquois, built fortifications opposing Champlain, 107
burial customs of the, 14, 15
wars of the, 151
Ives relates burial custom of ancient Peruvians, 16

Jacateuctli, the dress of deceased Mexican merchant, 25
Jackson Co., Tenn., ancient fortifications, mounds, and graves near Floyd's Lick, 12
Jamaica, customs of ancient inhabitants of, 122
James's Expedition, reference made to, 34
Jasper, fragments, in grave at earthwork near Franklin, Tenn., 61
spear-head from valley of Cumberland River, Tenn., 140
Jenner's discovery of protective power of cowpox, 96, 97
Jewels found in Peruvian Tombs, 31
Jewett, Maj. John F., near Livingston, Overton County, Tenn., deposit of human bones near residence of, 12
Joutel describes burial customs of Chouanons, 14

Kansas, burial customs of the, 17
Kappas, burial customs of the, 17
Katahbas, ravages of smallpox among, 97
Keating's Expedition, reference made to, 34
Kentucky, abandonment of aboriginal remains by primitive inhabitants, 88
body found in cave near Lexington, 5
body found in limestone cavern in, 4
body found in Mammoth Cave, 33
body found in saltpetre cave of, 5
location in, of stone graves containing human remains, 1
pipe and vase from mound near Hickman, 63, 138
works near Hickman, 37
Kertsch in the Crimea, Dr. Rathke on crania from tumuli at, 118
King of Santee, John Lawson's visit to the, 2
Kirchner, Father, on phallus worship in America, 136
Knife, scalping, from valley of Cumberland River, Tenn., 139
Knisteneaux, smallpox among the, 98
Kwappas. *See* Kappas.

Labat, Father, on yellow fever in Brazil, 93
Lafitau, C. P., reference made to his Mœurs des Sauvages Amériquains, 14, 19
Lahontan, Baron, extent of the Mississippi and Missouri Rivers, 149
Lake Erie, Skeletons of small people found in ancient mounds near, 10
Lane, Turner, account of small skeletons found on his farm, 10
stone from farm of, in White Co., Tenn., 134
Languages of American aborigines, 150

Laudonnière, Admiral Renaud de, visited Florida, 143
accompanied by Jacob le Moyne in his second voyage to Florida, 14
Las Casas on gold found in Peruvian graves, 29
Lawson, John, New Voyage to Carolina, 2
on burial custom of the Santee Indians, 21, 22
on compression of cranium among the Waxhaws, 122
on ravages of smallpox, 97
reference made to, 70
Le Bossu, reference made to his Travels in Louisiana, 33
Le Moyne, Jacob, describes burial customs, 14
Le Moyne made drawings of implements of Florida Indians, 143
Lenapes, burial customs of the, 34
Le Petit, Father, account of rites performed by the Natchez, 19, 20
Lewis's and Clarke's Expedition, reference made to, 34
Lexington. *See* Kentucky.
Lick Branch, Tenn., Indian graveyard along the valley of, 7
pure silver obtained from stone grave near, 45
Limestone cavern in Kentucky, body found in, 4
Lingam of India, Haywood on the, 134
Little Tennessee River, mounds on banks of, 36
Livingston, Overton Co., Tenn., deposit of human bones near, 12
Llorente, reference made to works edited by, 29
Looking-glasses of the Inca-stone and of galinazo found in Peruvian tombs, 30
Louisiana, reference made to Le Bossu's Travels in, 33

McCullough deposited phallus from Chillicothe in Museum of Philosophical Society, 135
McGavoc, Mr., cemetery near Nashville, Tenn., 11
mound standing on property of, in Nashville, Tenn., 51
McLaughlin, Dr., on mortality among Indians, 98
McMinnville, Tenn., cave containing human bones found near, 2
Macrocephali mentioned by Hippocrates, 118
McWhorter, S. H., on image found in Henry Co., Tenn., 130
Madoc, Prince, supposed to have settled in the Mississippi Valley, 38
Magee, John H., certifies as to inclosure near Paris, Tenn., 131
Magnolia, reference made to, 91
Maine explored by Champlain, 107
Malarial fevers destroyed American aborigines, 89
Malay crania, measurements of, 47
skulls, internal capacity of, 114
Mama Oello, Coya, corpse of, seen by Garcilasso, 29
Runta, corpse of, seen by Garcilasso, 29
Mammoth Cave. *See* Kentucky.
Man painted on limestone bluff forming south bank of the Holston, Tenn., 4
Mankind, origin and identity of the races of, 119
Manchester, Tenn., ancient work near, 37
fortification near, 100
stone heaps near, 55
Mandan towns, fortifications of, 38, 39
Mandans are said to have derived their knowledge of fortifications from the Welsh, 38
burial customs of, 23, 24, 34
fortifications on Muskingum and Ohio Rivers ascribed by Catlin to the, 38
preserved arts and customs of mound builders of Mississippi Valley, 39
smallpox ravages among, 97
wigwams of, 38
Mantles of feathers worn by different races, 2–4
Maps of ancient America, 151
Marble cross, Peruvians are said to have had a white, 77
Marquette, Father, on discoveries and explorations in America, 148
Marquette, Father, on rock paintings in Missouri and Illinois, 138
Martinico, Brazil, yellow fever at, 93
Martius and Spix, travels in Brazil, 33
Mask of copper found in mound near Franklin, Tenn., 45
put on idols Huitzilopochtli and Tezcatlipoca in case of Mexican king's sickness, 26
Massachusetts, reduction of Indians of, from pestilence, 91
Mather, Lieut., attitude of skeletons from mounds in Wisconsin, 34
Matlazahuatl destroyed American aborigines, 89
Mats of bark and feathers enshroud the dead, 2–4
Maury's Co., Tenn., Parish's Mound in, 107
Mayer, Brantz, reference made to Mexico by, 28
Mayfield Station, Tenn., image from mound at, 133
Medal found in mound on French Lick Creek, near Nashville, Tenn., 52
Medicine among Indians of North America, Dr. Rush, Inquiry into the Natural History of, 67
pole in use by Mandans, 24
Meigs, Dr. J. Aitken, measurements of skulls by, 114
Memotombita, idols discovered by Mr. Squier at, 136
Meridia, cross in, 78
Metal found in mound on French Lick Creek, near Nashville, Tenn., 52
Mexican and Nootka Columbian languages, resemblance of, 125
burial customs, 28, 33
dead received pieces of paper representing passports against dangers in their final journey, 25, 26
kings, ashes of, deposited in Chapoltepec, according to Solis, 27
sculpture, image found in mound opposite Nashville, Tenn., resembles, 44
Mexicans and Chinese, ornaments and head-dresses of Tennessee stone-grave race resemble those of, 72
Clavigero's description of the funeral rites and sepulchres of the, 25
peculiarities of skulls of, 119
Peruvians, and Mongol Tartars, similarity of burial customs of, 31
Peruvians, and Natchez, resemblance of burial customs of the, 19
reverenced stones cut in form of cross, according to the Spaniards, 77
vase found in mound opposite Nashville, Tenn., resembles those of, 46
wore feather mantles at time of Spanish conquest, 2
Mexico abandoned by Toltecs from pestilence, 89
Clavigero's History of, 25
deaths from smallpox in, 95, 96
reference made to, by Brantz Mayer, 28
reference made to Clavigero's History of, 27, 28, 33
smallpox in, 94
stone idol from pyramid at Cholula, near, 132
Mica, fragments of, from ancient work near Franklin, Tenn., 76
Michoacan, deaths from smallpox in, 95
Milicken, Amos, image found in Henry Co., Tenn., on land of, 130
Minetarees, fortification of towns of, 39
smallpox ravages among, 97
Mississippi River, maps of the, 149
Mississippi, stone vessel from mound on Tallahatchie River, Fayette Co., 144
Valley, reference made to John Gilmary Shea's, 138
densely populated in ancient times, 1
remains of the, are referred to various aboriginal nations, 39
Missouri, Mr. Nuttal on the burial customs of the Osages of, 33
rock paintings in, 138
small stone graves near St. Louis, 10
Valley, smallpox ravages in, 97
Mitchell, Dr., on the Six Nations, 154
Miztecs, burial customs of the, 28
Miztica Baxa, cross drawn from cave of, 78

Moluches, burial customs of the, 33
Mongol Tartars, Peruvians, and Mexicans, similarity of burial customs of, 31
Mongolian crania, measurements of, 47, 114
Monro, Alexander, reference made to observations on the different kinds of smallpox by, 95
Montezuma's successor died of smallpox, 94, 95
Moon pyramid of Teotihuacan, Mexico, 28
  painted on limestone bluff forming south bank of the Holston, Tenn., 4
  venerated by aborigines, 106
Morgan, Lewis H., on burial customs among the Iroquois, 15
Mortality among Indians, 98, 99
Mortar from ancient work near Franklin, Tenn., 74
  from stone grave in valley of Cumberland River, Tenn., 51
Motolinia (Father Torribrio) on smallpox in Mexico, 90
Morton, Dr., examined bodies of Peruvians, 33
    gives evidence of the unity of race and species in the American savage nations, 32
    gives measurements of crania in his Crania Americana, 32, 47, 112, 113
    observations on burial customs, 32, 33, 34
Mound-builders of Tennessee, compressed the skull, 119, 121
    connection of, with distant southern nations, 84
Mound, at Mayfield Station, Tenn., image from, 133
  Bottom, Tenn., rock paintings in, 138
    celt from, 142
    combination of works at, 36
  burial, on Mr. Dixon's farm on White Creek Road, Tenn., 55
  burial or sacrificial, near inclosure on West Harpeth River, Tenn., 80
  in Cherry Creek Valley, near Sparta, Tenn., Dr. E. L. Gardenhire on, 12
  inclosed by embankment on bank of West Harpeth River, Tenn., 79
  in earthwork near Franklin, Tenn., 57
  near Clifton, Perry County, Tenn., image from, 131
  near Hickman, Kentucky, pipe from, 138
  Parish's, in Maury Co., Tenn., 107
  pyramidal, near Franklin, Tenn., 73
    in ancient work near Franklin, Tenn., 8
    on Franklin Pike, near Nashville, Tenn., 52
Mounds, ancient, near Lake Erie, skeletons of small people found in, 10
  apparent royal burial, contain but a few small graves, 9
  at Floyd's Lick, Jackson Co., Tenn., 12
  at Sycamore, Tenn., 55
  chain of four, surrounded by a burying-ground, opposite Nashville, on bank of Cumberland River, 7
  charcoal, ashes, paintings, and caves, connection between, 4
  connected with earthwork near Franklin, Tenn., 56
  containing stone images, 4
  dimensions of, 57
  five miles above mouth of the French Broad, Tenn., on Holston River, 4
  found in same location with caves containing human remains, 1
  fortifications, and earthworks in Tennessee, 36–55
  hollow, on Cherry Creek, White Co., Tenn., 134
  of work at Oldtown, Tenn., 82
  of work in Henry Co., Tenn., 130
  sacrificial and burial, in Tennessee, 41–55
  small, conical, in ancient work near Franklin, Tenn., 8
  stone-grave burial, 37
  stone, of stone fort near Manchester, Tenn., 101
  surrounded by earthworks, 36
  within wall near Paris, Tenn., 131
  within wall opposite entrance of cemetery near Carthage, Tenn., 3
Mountain Indians, Herrera on burial customs of, 33
Mobilia, numerous population in, 105
Mummies and cavern of Ataruipe, Humboldt on, 31, 32
    coverings of, Caleb Atwater quotes Mr. Clifford respecting the, 5
    exhumed by Dr. Ruschenberger near Arica, 33
    from cave in Warren Co., Tenn., 2
    in caskets, discovery in the United States of, 32
    royal, found at Cuzco, 29
Mummy of a Muysca Indian of New Grenada, 32
Murfreesboro', Tenn., pipe from, 75, 138
Murphy, Dr. Thomas, introduced vaccine inoculation, 96
Muscogee, burial customs of the, 33
Muscogulges, burial customs of the, 17
Muskohgees, ravages of smallpox among, 97
Muscokees, burial customs of the, 16
Muskingum River, fortifications along the, ascribed by Catlin to the Mandans, 38
Muysca Indian of New Grenada, mummy of a, 32

Nahants, burial customs of the, 34
Name of the ancient race, inquiry into the, 147
Nance, E. W., plan of stone fort near Manchester, Tenn., 100, 103
Narvaez, Pamphilo de, attempted to conquer Florida, 105
    found a temple in Florida in which were chests containing a body each, 14
    John Ortiz came to Florida with, 13
Nashville, Tenn., built over Indian graveyard, 7
    collection of aboriginal remains in State capitol at, 139
    cranium from burial mound opposite, 111
    idol found near, 133
Natchez are said to have reigned over the entire country in which mounds are being found—their extent and power, 125
  burial customs of the, 19, 107
  crania from mound opposite Nashville, Tenn., resemble that of the, 48
  flattening of cranium among, 121
  method employed by, in process of flattening the head, 124
  Peruvians, and Mexicans, resemblance of burial customs of the, 19
  ravages of smallpox among the, 97
  resemblance of crania of, to aborigines of Tennessee, to Toltecs, and to Peruvians, 120, 121
  rites performed by the, Father le Petit's account of the, 19, 20
Naumkeags, Salem, Mass. is the site of the old village of the, 34
Needle of polished bone from grave of child in earthwork near Franklin, Tenn., 61
New England tribes, burial customs of the, 34
    pests among the, 90, 91
New Grenada, burial customs of Indians of, 33
    mummy of a Muysca Indian of, 32
New Jersey, reference made to Smith's History of, 34
New Spain, A. von Humboldt's political essay on kingdom of, reference made to, 28
Niagara Falls, excavations at Goat Island, 34
Nicaragua, Mr. Squier noticed crosses in, 78
    reference made to Squier's, 136
Nitre obtained from caves in Tennessee during revolutionary war, 1
Nootka Columbian language resembles the Mexican, 125
    idioms of, 124
North Carolina, John Lawson's account of the burial customs of Indians of, 22, 23
    visited by John Verrazzani, 104
Nuttall locates place called Quigalta, 121
    on burial customs of the Osages of Missouri, 33

Obed's River, Tenn., remains on, 104
Oblong mound in front of gateway of stone fort near Manchester, Tenn., 37
Obsidian, fragments of, from ancient work near Franklin, Tenn., 76

Ocute, Georgia, supplied servants to De Soto, 105
Oello, Coya Mama, corpse of, seen by Garcilasso, 29
Ohio, fortifications on the, ascribed by Catlin to the Mandans, 38
cross found in mound at Chillicothe, 77
Oldtown, Tenn., ancient earthworks at, 82
celt from, 142
combination of work near, 36
crania from, 110, 111
extensive collection of stone graves at, 8
pipe from, 138
Omahas, burial customs of the, 24, 34
Ondegardo, Paul, corpses of Incas seen in the house of, by Garcilasso, 29
on royal mummies found at Cuzco, 29
Oriflamme, ship, landed at Brazil, where yellow fever prevailed, 93
Orinoco, valley of the, burial customs of the Indians of the, 33
Ornament, carved, of great beauty found on skeleton in mound opposite Nashville, Tenn., 42, 43, 45
from rock mound near Pulaski, Tenn., 108
shell, with carved cross in centre, from stone grave near Nashville, Tenn., 77
shape of human countenance, from grave of child at foot of mound opposite Nashville, Tenn., 48
Ornamentation of vases from graves in earthwork near Franklin, Tenn., 62
Ornaments, shell, pearl, and copper, from Tennessee, 136
buried with the dead in Tennessee, 8
copper, from graveyard on farm of Col. W. D. Gale, near Nashville, Tenn., 8
found in grave on Col. Overton's Hill, Tenn., 40
of bodies buried around altar in mound opposite Nashville, Tenn., 42
of images of Tennessee, stone-grave race resemble those of Chinese and Mexicans, 72
wooden, coated with copper, found in graves in Tennessee, 45
Oronoco, natives of, little accustomed to burn their dead, 32
Ortiz, John, History of, recorded by Fernando de Soto, Luis Fernandez de Bimeda, The Gentleman of Elvas, and the Inca, Garcilasso de la Vega, 13
testimony of, concerning burial custom in Florida, 13
Oruro, epidemics at, 90
Osage Indians flattened their heads, 122, 124, fig. 65
Mr. Nuttall on the burial customs of the, 33
Osborn's Place, Tenn., combination of works on, 36
Otaheite, burial customs of the people of, 16
Overton Co., Tenn., deposit of human bones near residence of Maj. John F. Jewett, near Livingston, 12
Overton, Col., aboriginal settlement occupied hill in Tennessee, upon which is residence of, 39
cranium from stone grave at residence of, 111
stone graves in Tennessee, on plantation of, 8
Oviedo respecting syphilis, 68
O-why-hee Island, king of, wore red-feathered cloak when seen by Capt. Cook, 2

Paint bowl from stone grave in valley of Cumberland River, Tenn., 51
from grave in earthwork near Franklin, Tenn., 62, 63
Paintings, apparent purpose of Indian, 4
caves, mounds, charcoal, and ashes, connection between, 4
Palenque, Mr. Stevens describes tablet from ruins of, 77
Pallas, Prof., found an image in Russia resembling those of the mound-builders of Tenn., 52
Pampas, burial customs of the, 33
Panama inhabited by Caribs, 122
Papantla, pyramids of, 120, 132
Paper, pieces of, given to the Mexican dead, and representing passports against danger in their final journey, 25, 26
Paraguas, burial customs of the, 33
Paraguay, smallpox in, 96
Parecas, burning of the dead among the, 32
Paris, Tenn., image ploughed up by Mr. Hartsfield near, 131
Parish's Mound in Maury Co., Tenn., 107
Parker, Rev., on mortality among Indians, 98
Passways of work on West Harpeth River, Tenn., 80
over the earthworks near Franklin, Tenn., 57
Patagonians, burial customs of the, 33
Patagonia, reference made to Falkner's, 33
Pavement of cave near Pulaski, Tenn., 3
Pawnees, smallpox ravages among, 97
Pearl ornaments from Tennessee, 136
Pearls found by Spaniards in grave in province of Cutifachiqui, 14
Pearson, Dr., has drawing of skeleton found in Salem, Mass., 34
Peru, reference made to History of Conquest of, 29
smallpox in, 96
Peruvians are said to have had a cross of white marble, 77
believed in resurrection, according to Prescott, 29
bodies of, examined by Dr. Morton, 33
burial customs of the, 29
flattening of cranium among the, 121
Ives relates burial customs of ancient, 16
Mexicans, and Mongol Tartars, similarity of burial customs of, 31
Mexicans, and Natchez, resemblance of burial customs of the, 19
resemblance of crania of, to those of the aborigines of Tennessee, the Natchez, and Toltecs, 120, 121
tombs of the, construction of, according to Garcilasso, 30
vases found in mound opposite Nashville, Tenn., resemble those of, 46
Pestilence, among the Toltecs, 90
probable, among primitive inhabitants of Kentucky and Tennessee, 88
Pestilences among aborigines of America, 89–99
Pests among Indians of Canada and New England, 90
Phallus consecrated by Egyptians, 136
found at Chillicothe, Ohio, 135
Pierced tablets from Pulaski, 108, fig. 62
from Stone Fort, 103, fig. 59
Pickett, History of Alabama, reference made to, 14
Pigmies, ancient, Haywood's account of, 10, 13
belief in existence of, opposed by Col. A. W. Putnam and others, 11, 13
existence of, not established, 11, 13
graves in Tennessee are undoubtedly those of children, 9, 13
so-called, prove to be children, 39
Piney River, Tenn., remains along, 104
Pipes, deposited with skeletons from burial-ground near Carthage, Tenn., 3
found near stone fort near Manchester, Tenn., 103, fig. 58
from Tennessee, 138, 139, fig. 74
from ancient work near Franklin, Tenn., 75, fig. 41
from near Murfreesboro, Tenn., 76, fig. 42
stone, from work at Oldtown, Tenn., 87, fig. 53
Plagues, origin of American, 92
Plates, copper, from grave in earthwork near Franklin, Tenn., 59
Plummet of black magnetic iron from Tennessee, 141, fig. 80
Ponce de Leon, testimony of, to the density of Indian population, 104
Popayan, epidemics at, 90
Population, large, of aborigines in Southern States, 105
of Mississippi Valley dense in ancient times, 1
Porto Rico, customs of ancient inhabitants of, 122
Position in which ornaments were found in graves, 136
of body found in limestone cavern in Kentucky, 5
relative, of inner and outer circle of stone coffins in mounds opposite Nashville, Tenn., 46

Pot, black, in grave of earthwork near Franklin, Tenn., 61, 62
Potosi, epidemics at, 90
Potowatomies, burial customs of the, 34
Pots from within ancient work near Franklin Tenn., 74
Pottery found in graves along bank of Cumberland River, Tenn., 48, 49, 64, fig. 33
found in graves at Floyd's Lick, Tenn., 12
found in mound on French Lick Creek, near Nashville, Tenn., 51
found in Tennessee illustrates condition of former inhabitants, 1
fragments from around sulphur spring, Nashville, Tenn., 7
fragments found in alluvial plain around the burying-ground opposite Nashville, Tenn., 7
fragments of, from fields in valley of Duck River, Tenn., 103
fragments of, in fields around mounds on Cumberland River, Tenn., 49
fragments throughout mound of work on West Harpeth River, Tenn., 80, 81
from ancient work at Oldtown, Tenn., 82, 83, 84
from graveyard on White Creek Road, Tenn., 53
in mound at Oldtown, Tenn., 86
pieces of, from graves in mound near Brentwood, Tenn., 38
Powell's River, Tenn., remains on, 104
Prayer, attitude of, by image from mound opposite Nashville, Tenn., 44
Prescott on civilization of the Incas, 29
Pressure, effects of, upon crania, 48, 49, 54, 114
Priapus found at Chillicothe, Ohio, 135
Prichard on the foramen magnum, 116, 117
Primitive inhabitants abandoned aboriginal remains of Kentucky and Tennessee, 88
Prince's Chron., reference made to, 91
Pritchard, Dr., remarks upon the Flatheads, 125
Pulaski, Giles Co., Tenn., burial cave on plantation of Mr. William Sheppard, near, 3
remains near, 108
Putnam, Col., took shell ornament with carved cross in centre from breast of skeleton in grave near Nashville, Tenn., 77
opposed belief in existence of Pigmy race, 11
Pyramid of Cholula, near Mexico, idol from, 132
Indian, of Cholula, Mexico, 28
Pyramids around the four faces of pyramids of sun and moon of Teotihuacan, Mexico, served as burying places, 28
of Cholula, Teotihuacan, and Papantla, 120, 132
truncated, on north bank of the Holston, Tenn., 4
Pyramidal mounds, 36
in ancient work near Franklin, Tenn., 8
near Franklin, Tenn., 73
mound within embankment on West Harpeth River, Tenn., 79
sacrificial mounds of work at Oldtown, Tenn., 82

Queen of Viracocha, corpse of, seen by Garcilasso, 29
Quigatta, place called, located by Mr. Nuttall, 121
Quinetzin, body of King, 33
Quiogozon, the royal tomb of North Carolina Indians, 23
Quito, Caciques of, were buried in the principal temple, 30

Rale, Mr. T., on burial customs among the Illinois, 15
Ramsay, Dr. J. G. M., History of the Shawnees, 154
collection of antiquities of, 135
Rathke, Dr., on crania from tumuli at Kertsch in the Crimea, 118
Relics buried with the dead in Tennessee, 8
exposed by caving of banks of Cumberland River, opposite Nashville, Tenn., 7
found around Oldtown, Tenn., 86, 87
found around sulphur spring, Nashville, Tenn., 7
found in mound in North Nashville, Tenn., 50
Relics found in vicinity of mound on Franklin Pike, near Nashville, Tenn., 52
found near stonework near Manchester, Tenn., 101
from ancient town site above mouth of Hiawassa River, Tenn., 131
from cave near Pulaski, Tenn., 108
from the mounds and stone graves in Tennessee, 128–145
of interest found within ancient work near Franklin, Tenn., 73
Religious ceremonies of aborigines at De Soto's time, 106
customs, apparent, of aborigines of Tennessee, 135
purpose, apparent, of mound on Franklin Pike, near Nashville, Tenn., 52
Remains, aboriginal, near Pulaski, Giles Co., Tenn., 108
collection of aboriginal, in State capitol at Nashville, Tenn., 139
found in a copperas cave in Warren Co., Tenn., 1
found in mound opposite Nashville, Tenn., on bank of Cumberland River, 42
found in pyramid of Cholula, Mexico, 29
of Mississippi Valley are referred to various aboriginal nations, 39
Reservoir in centre of inclosure near Paris, Tenn., 131
Resurrection believed in by Peruvians, according to Prescott, 29
Rhodius, Appolonius, mentioned customs of inhabitants of Colchis, near Pontus, 16
Riccarees, fortification of towns of, 39
Rites, funeral, and sepulchres of the Mexicans, Clavigero, description of the, 25
performed by the Natchez, Father le Petit's account of the, 19, 20
Robertson, General, History of America, 69
on Shawnees, 154
William, on ravages of smallpox, 97
Rochefort on origin of Caribs, 122
Rock mound near Pulaski, Tenn., 108
paintings, aboriginal, 137, 138
Roman vase, image found in mound opposite Nashville, Tenn., resembles, 44
Romans buried their dead in boxes, 34
Romans, Captain Bernard, on customs of inhabitants of Colchis, near Pontus, mentioned by Appolonius Rhodius, 16
on burial customs of Indians, 16, 17
reference made to History of Florida, 33, 141
Rush, Dr., Inquiry into the Natural History of Medicine among the Indians of North America, 67
Ruschenberger, Dr., exhumed mummies near Arica, 33
Rutherford's Creek, mound on junction of Carter's and, 107

Sacrifices, mounds for purpose of religious, 36
on occasions of death of the Incas, 30
on occasion of Mexican king's funeral, 27
Sacrificial mounds, pyramidal, of work at Oldtown, Tenn., 82
mound near inclosure on West Harpeth River, Tenn., 80
vase in centre of mound opposite Nashville, Tenn., 42
Salem, Mass., is the site of the old village of the Naumkeags, 34
Saliceto, Gulielmus de, respecting syphilis, 69
Saltpetre cave of Kentucky—bodies found in—small size of bodies found in—teeth of bodies found in, 5
collecting earth for, 4
Sanchez, Antonio Rikew, respecting syphilis, 68
Santee Indians, John Lawson, account of burial customs of the, 21, 22
John Lawson's visit to the king of the, 2
Sarcophagi or stone coffins in sacrificial mound opposite Nashville, Tenn., 42
Sarmiento on gold found in Peruvian graves, 29
Savannah River, temple in Talmaco on, 106
Scales, Mr., stone graves in Tennessee on plantation of, 8

Scalping knife from valley of Cumberland River, Tenn., 139, fig. 75
Schoolcraft on smallpox ravages, 97
Scoseler, Dr., states that people practising compression of head are subject to apoplexy, 124
Scotland, burial practised by ancient inhabitants of, 34
Scouler, Dr., on idioms of Nootka Columbians, 124
Scythians, ancient, little accustomed to burn their dead, 32
Sea shells, carved, from graves in earthwork near Franklin, Tenn., 60, 61
Senecas, burial customs among the—resided at Tonawanda and Cattaraugus, 15
Sensuality of West Indian aborigines, Bryan Edwards on excessive, 67
Sepulchres and funeral rites of Mexicans, Clavigero's description of the, 25
near Teotihuacan, Mexico, 27
of ancient Chichimecs, 28
Servando, Dr., on smallpox in America, 95
Sewees, ravages of smallpox among the, 97
Shawanese, ravages of smallpox among the, 97
Shawnees driven from Cumberland by the Cherokees and Chickasaws, 51
inhabited Kentucky and Tennessee, 147
Shea, John Gilmary, notes on Shawnees, 149
reference made to Mississippi Valley, 138
Sheldon, reference made to, in Archæol. Amer., 33
Shell found in graves along bank of Cumberland River, Tenn., 48
from Pulaski, Tenn., 109, fig. 62
ornament with cross carved in centre from stone grave near Nashville, Tenn., 77
carved, of great beauty, found on skeleton in mound opposite Nashville, Tenn., 42, 43, 45
from Tennessee, 136
shape of human countenance, from grave of child at foot of mound opposite Nashville, Tenn., 48, fig. 15
with cross cut on it found in grave in Sparta, Tenn., 77
Shells in fields around mounds on Cumberland River, Tenn., 49
sea, in graves in earthwork near Franklin, Tenn., 59, 60, fig. 29
used as ornaments of bodies found in mound opposite Nashville, Tenn., 42, 43, 45, figs. 6–8
Sheppard, burial cave on plantation of Mr. William, near Pulaski, Giles Co., Tenn., 3
Shrouds of bodies found in cave on Smith's Fork of Cumberland River, Tenn., 3
of body found in limestone cavern in Kentucky, 4
of human remains from cave in Warren Co., Tenn., 2
Silex fragments, in grave at earthwork near Franklin, Tenn., 61
from fields in valley of Duck River, Tenn., 103
Silver Bluff, temple in Talmaco, on Savannah River, 106
pure, obtained from stone grave near Lick Branch, Tenn., 45
Sioux, burial customs among the, 15, 24
Skeleton in coffin from mound at stone fort near Manchester, Tenn., 102
in octagonal stone grave in mound of earthwork near Franklin, Tenn., 58
Skeletons discovered in burial-ground near fortification near Carthage, Tenn., 3
excavated at Salem, Mass., 34
exposed by caving of banks of Cumberland River opposite Nashville, Tenn., 7
from carefully constructed grave in mound opposite Nashville, Tenn., 44
from graves in earthwork near Franklin, Tenn., 62, 72, 73
from mound near Brentwood, Tenn., 37
without coffin near altar of mound opposite Nashville, Tenn., 45
Skin, color of, of bodies found in cave on Smith's Fork of Cumberland River, Tenn., 3
of body found in limestone cavern in Kentucky, 5
Skipwith, Col. Peyton, obtains stone vessel from Mississippi, 145
Skull from grave near Franklin, Tenn., 73
from graves on hill of Col. Overton's residence in Tennessee, 39, 40
from mound at stone fort near Manchester, Tenn., 102
from rock mound near Pulaski, Tenn., 109
misshaped, from grave of earthwork near Franklin, Tenn., 62
Slavery destroyed American aborigines, 89
Sloane, Sir Hans, M.D., Natural History of Diseases of West India Islands, 68
Smallpox in America, 94
in Mexico, 90
Smith County, Tenn., images from, 135
Smith, History of New Jersey by, reference made to, 34
Smith's Fork of Cumberland River, burial cave found on, 3
Snodgrass, Dr. Jas. H., on Indian graves in vicinity of Sparta, Tenn., 12, 13
Sœmmering on the foramen magnum, 116, 117
Solis, History of Conquest of Mexico, 27
South American Indians, attachment of, to spot where bones of their fathers repose, 32
South Carolina visited by De Ayllon, 104
Spaniards found Mexicans reverencing stone cut in form of cross, 77
found pearls in grave in one of the chief towns of Cutifachiqui, 14
Sparta, White Co., Tenn., burying-grounds at, 8
cave containing human bones found near, 2
Dr. E. L. Gardenhire on mound and Indian graves near, 12
Dr. Jas. H. Snodgrass on Indian graves in vicinity of, 12, 13
small skeleton discovered near, 10
stone from mound near, 134
vessels and ornament with cross painted on them found in grave in, 77
Spear-heads from ancient work near Franklin, Tenn., 76, fig. 43
from fields in valley of Duck River, Tenn., 103
from Oldtown, Tenn., 87
jasper, from valley of Cumberland River, Tenn., 140, figs. 77, 78
Spear-shaped implement from ancient graveyard on White Creek Road, Tenn., 53
Spix and Martius, Travels in Brazil, 33
Squier, E. G., discovered idols at Memotombita and Zapatero, 136
rectifies error respecting crosses mentioned by Bonturini, 78
reference made to, 136
Squier and Davis mention stonework near Manchester, Tenn., 100
Stars venerated by aborigines, 106
St. Louis, Mo., small stone grave near, 10
Stephens, John L., carvings from Central America, 136
describes tablet from ruins of Palenque, 77
Travels in Central America of, 77
Yucatan of, reference made to, 136
Stone and clay images from mounds and stone graves in Tennessee, 128–136
casing around body in saltpetre cave in Warren Co., Ky., 5
coffins used by ancient race of Tennessee for burial of their dead, 7
cover of graves in Tennessee, 8
fort, 100, figs. 56, 57, 60
from farm of Turner Lane, in White Co., Tenn.—from Sparta, 134
graves around altar in burial mound near inclosure on West Harpeth River, Tenn., 81
construction of, 8
exposed by caving of banks of Cumberland River opposite Nashville, Tenn., 7
in Tennessee, 7–35
of work at Oldtown, Tenn., 83

Stone graves, size and shape of, 9
with human remains found in Tennessee, 1
within work at Oldtown, Tenn., 82
hatchets of hard silicious material, beautifully polished, obtained from graves in Nashville, Tenn., 7
found around mounds on Cumberland River, Tenn., 49
heaps near Manchester, Tenn., 55
images, 4
implements from ancient graveyard on White Creek Road, Tenn , 53, fig. 21
found in alluvial plain around the burying-ground opposite Nashville, Tenn., 7
found in Tennessee illustrate condition of former inhabitants, 1
from Tennessee, 141
from valley of Cumberland River, Tenn., 139
in fields near mounds on Cumberland River, Tenn., 49
mounds of stone fort near Manchester, Tenn., 101
pipe from work at Oldtown, Tenn., 87
River, Tenn., burying-grounds along, 8
mounds on banks of, 36
vessel from Mississippi, 144
from Tennessee, 144, 145
Strawberry Plains, Knox Co., Tenn., idol found in cave on Holston River, near, 128
Sulphur spring, Nashville, Tenn., relics found around, 7
Sun worshipped by aborigines, 106
painted on limestone bluff forming south bank of the Holston, Tenn., 4
pyramid of Teotihuacan, Mexico, 28
Surinam inhabited by Caribs, 122
Sword, stone, from octagonal grave in mound of earthwork near Franklin, Tenn., fig. 24
dimensions of, 58
superiority to other existing specimens, 58
Sycamore, Cheatham Co., Tenn., stone graves at, 3, 55
Syphilis, antiquity of, among Indians, 71
destroyed American aborigines, 89
traces of, in bones found in graves in Tennessee, 35
from graves near Tennessee, 61, 65–73
from mound on Cumberland River, Tenn., 49
from stone graves at Oldtown, Tenn., 85

Tae-heih of the Chinese, 137, fig. 73
Tablet described by Mr. Stevens from the ruins of Palenque, 77
Tallahatchie River, Fayette County, Mississippi, stone vessel from mound on, 144
Talmaco, temple in, 106
Taunta, Valescus de, respecting syphilis, 69
Techichi, a domestic quadruped killed on occasion of Mexican funeral, 26, 27
Teeth as evidence that small crania belong to children and not to pigmies, 11, 13
of body from limestone cavern in Kentucky, 5
Temples close to Teotihuacan, Mexico, 27
found in Florida by Narvaez, in which were chests containing a body each, 14
in Talmaco, on Savannah River, near Silver Bluff, 106
of aborigines, mounds probably the sites of, 36
of Anahuac, cross in, 78
terra-cotta heads from, 120
Tennessee, abandonment of aboriginal remains by primitive inhabitants, 88
Historical Society, implements at Museum of, 142
Indians in, wore feather mantles at the time of De Soto's march through the south, 2
location in, of stone graves containing human remains, 1
River, mounds on banks of Big and Little, 36
remains on, 104
stone graves in, 8
wigwams of aborigines of, 38
Teotihuacan, Mexico, temples and sepulchres near, 27
pyramids of, 120, 132
sun and moon pyramid at, 28
Tezcatzoncatl, habit of a deceased Mexican drunkard, 25
Tezcatlipoca, mask put on face of idol in case of Mexican king's sickness, 26
Thoma, W. A., plan of fortification near Manchester Tenn., 100
Tlaloc, a drowned Mexican arrayed in the dress of, 25
Tlascala, smallpox in, 94
Toledo, Garci Gutierez de, discovered gold in Peruvian tomb, 31
visited by Humboldt, 31
Toltecans compressed the skull, 119
Toltecs, account of the, 90
abandoned Mexico from pestilence, 89
flattening of cranium among, 121
of Mexico, resemblance of crania of Kentucky and Tennessee stone-grave race and those of the, 72
re-emblance of crania of, to those of aborigines of Tennessee, of Peruvians, and Natchez, 120, 121
Tomahawk, iron, from mound on Franklin Pike, near Nashville, Tenn., 52
Tomb near Truxillo, gold found in, 29
royal, or quiogozon, of the North Carolina Indians, 23
Tombs, construction of Peruvian, according to Garcilasso, 30
Tonacaguaheritl or tree of life mistaken for a cross, 78
Tonawanda, Senecas resided at, 15
Topiltzin, Chief of Toltecs, 90
Torquemada on compression of skull, 119
states loss of Indians from Matlazahuatl from smallpox, 90, 94
Townsend, Mr., on method of flattening the head, 123
Transact. Amer. Ethnolog. Society, reference made to, 12, 136
Travels in Central America, Stephens, 77
Troost, Dr. G., certifies as to inclosure near Paris, Tenn., 131
describes idol inclosed in a large shell—found utensils, 135
on attitude of skeletons from mounds in Tennessee, 34
on Indian cemeteries, 11, 12
on value of shells among the aborigines, 45
Truxillo, gold found in tomb near, 29
Tumuli in Guiana not to be met with, 32
at Kertsch in the Crimea, Dr. Rathke on crania from, 118
Tupac Yupanqui, corpse of, seen by Garcilasso, 29

Uchees, ravages of smallpox among, 97
Ulloa, articles found in Huaca in presence of, 30
describes fevers in the tropics, 90
Utensils buried with the dead in Tennessee, 8
found by Dr. Troost, 135
found near stonework near Manchester, Tenn., 101
from stone grave near Brentwood, Tenn., 41
inclosed in coffin of body in saltpetre cave, Warren Co., Ky., 5

Vaccine inoculation, 96
Valladolid, smallpox in, 96
cowpox in, 96
Valmis, Don Antonio, found cowpox in Valladolid and in Alesco, near La Puebla, 96
Vámbéry, Arminius, on burial customs of Turcomans, 118
Vase found in ancient pyramid of Cholula, Mexico, 29
from grave in earthwork near Franklin, Tenn., 59, 60, 61, 64, 65, figs. 26, 27
from burial mound near Brentwood, Tenn., 41, fig. 3
from grave on Mr. Dixon's farm, on White Creek Road, Tenn., 53, fig. 22
painted, near female skeleton near altar in mound opposite Nashville, Tenn., 45, 46

Vases, human-head-shaped, from mounds in Tennessee, 63
found in mound in North Nashville, Tenn., 50
from ancient work at Oldtown, Tenn., 82, 83, 84, figs. 48–52
from graveyard on farm of Col. W. D. Gale, near Nashville, Tenn., 8
from within ancient work near Franklin, Tenn., 74, figs. 34, 35
of Egyptians and Romans, image found in mound opposite Nashville, Tenn., resembles, 44
with crosses painted on them found in graves in Tennessee, 35
Vega, de la, on compression of skull, 119
recorded history of John Ortiz, 13
Venezuela, ancient monuments near Zenu in, 33
Vera Cruz, vomito in, 94
Verrazzani, John, visited North Carolina, 104
Vessels, earthen, found in graves on Col. Overton's hill, Tenn., 40, figs. 1, 2
of earthenware deposited with skeletons from burial-ground near Carthage, Tenn., 3
earthenware, in octagonal grave in earthwork near Franklin, Tenn., 59
from grave in earthwork near Franklin, Tenn., 60
from mound on Franklin Pike, near Nashville, Tenn., 52
stone and earthenware, from Tennessee, 144, 145
stone, from Mississippi, 144, fig. 85
with cross painted on them found in grave in Sparta, Tenn., 77
Vines, Richard, reported pestilence among the Indians, 91
Viracocha, corpse of King, seen by Garcilasso, 29
Vues des Cordillères, reference made to, 29

Wall near Paris, Tenn., 131
of ancient work in Henry Co., Tenn., 130
of ancient work, stone fort, near Manchester, Tenn., 37
of stone fort near Manchester, Tenn., 100
traces of, opposite the entrance of cemetery near Carthage, Tenn., 3
Wallamat Indians flatten cranium, 123
Wales, burial practised by ancient inhabitants of, 34
War destroyed American aborigines, 89
of the Iroquois, 151
Warren, Dr. Henry, on introduction of yellow fever in Barbadoes, 93
Warren County, West Tennessee, human bones found in, 1
Warren's Comp. View, reference made to, 34
Waxhaws flattened the head, according to John Lawson, 122
Weapons from Tennessee, 139, 140
Webster, Noah, on pestilences, 92
Wedge, polished, from stone grave within ancient work near Franklin, Tenn., 75
Wedges from Oldtown, Tenn., 87
Welsh, Mandans are said to have derived their knowledge of fortification from the, 38
West Indian Aborigines, Bryan Edwards on excessive sensuality of, 67
reference made to Edwards's History of the, 34
Sir Hans Sloane on Natural History of the Diseases of, 68
White's Creek, Tenn., stone graves at, 8, 53
Wigwams of aborigines of Tennessee—of Mandans, as given by Catlin, 38
traces of, on Mr. Dixon's farm, on White Creek Road, Tenn., 54
Wilkins, Charles, respecting body from saltpetre cave in Warren Co., Ky., 5
Williams, Capt. Daniel, affirms the finding of a female body well preserved, with yellow hair and shrivelled flesh, 4
Wyman, Prof. Jeffries, on the foramen magnum, 116, 117
on resemblance of skull of young gorilla and of man, 117
Wooden ornaments, coated with copper, found in graves in Tennessee, 45, fig. 10

Xicalli, a vessel of the Mexicans, 28

Yellow fever, analogy of Matlazahuatl to, 89
in Brazil, according to Father Labat, 93
Young, Sir W., reference made to account of Caribs by, 33
Yucatan, crosses in, mentioned by Gomara, 78
inhabited by Caribs, 122
reference made to Stephens's, 136
Yupanqui, corpse of Tupac, seen by Garcilasso, 29

Zapatero, crosses at, 78
idols discovered by Mr. Squier at, 136
Zapotecs, burial customs of the, 28
Zea, Father, describes burial customs, 32
Zenu in Venezuela, ancient monuments near, 33

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.
269

THE SCULPTURES

OF

SANTA LUCIA COSUMALWHUAPA

IN

GUATEMALA.

WITH AN ACCOUNT OF TRAVELS IN CENTRAL AMERICA AND ON THE WESTERN COAST OF SOUTH AMERICA.

BY

S. HABEL, M.D.

WASHINGTON CITY, D.C.:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
1878.

COMMISSION

TO WHOM THIS PAPER WAS REFERRED.

W. D. WHITNEY, LL.D.
J. H. TRUMBULL, LL.D.

COLLINS, PRINTER.
PHILADELPHIA.

ADVERTISEMENT.

In 1862, Dr. Habel, in obedience to a long-felt desire, relinquished his medical practice, in order to make, at his own expense, a tour of exploration through Central America, and the Northwestern States of South America. In the course of the seven years devoted to these investigations he made collections in natural history, and observations in meteorology, topography, geology, and archæology. The following memoir contains a brief account of Dr. Habel's ethnological and archæological researches, and a minute description of a group of sculptures discovered by him at Santa Lucia Cosumalwhuapa, in Guatemala, a small town in the department of Escuintla, near the base of the Volcan del Fuego, at the commencement of the slope which extends from the mountain range to the Pacific coast. The variety of ornamentation, the skill in execution, and the grade of refinement exhibited in the designs upon these bas-reliefs, as well as the almost total absence of sculptures hitherto reported on the southern side of the Sierras, induced the Smithsonian Institution to include Dr. Habel's paper among its Contributions to Knowledge. The slabs were afterwards visited by Dr. Bastian, who purchased them for the Berlin Museum.

The author was invited to visit Washington, where a room was provided for him at the Institution, and the drawings of these sculptures were reproduced by an artist, under his personal supervision and constant instruction. The expense of the preparation of the manuscript and illustrations, as well as of the publication, has been borne by the Smithsonian Institution. The publication of the work was recommended by several of the leading archæologists of the country, and in a report in regard to it Prof. W. D. Whitney remarks, "It seems to me a story refreshing by its brevity and simplicity, very unlike the pompous and boastful way in which such things are often heralded. One may not agree with all the inferences drawn at the end, but that is a matter of very small importance; no two persons would arrive at precisely the same conclusions. So far as I can judge, the Institution has every reason to take pleasure and pride in the issue of such a contribution to American archæology."

The Institution is under obligations to Prof. Otis T. Mason for a critical revision of the manuscript and the correction of the proof-sheets of this work.

JOSEPH HENRY,
Secretary Smithsonian Institution.

Washington, D. C., February, 1878.

INTRODUCTORY REMARKS.

UNDER the patronage of the Smithsonian Institution, I am enabled to publish, in the present paper, the archæological and ethnological portion of my investigations prosecuted in Central and South America, and occupying a period of over seven years. While these travels afforded me the opportunity of witnessing nature in her simple grandeur, they were also connected with hardships, not only those arising from the character of the regions traversed, but others experienced from my fellow-men.

The most interesting portion of this description is that relating to the sculptures discovered at Santa Lucia Cosumalhuapa, indicating the former existence, upon the southern side of the mountains, of a people who had obtained a high degree of culture in arts and religion, as is evidenced by the designs upon their bas-reliefs. At the request of the Institution I have added a brief sketch of the regions traversed, in so far as they will throw any light upon the archæological and ethnological facts narrated.

In judging of the merit of my work, the reader must not censure me for what I have left undone, my shortcomings being painfully apparent to myself, but must form his opinion from that which is here set before him.

I have endeavored to spell the aboriginal words as they are pronounced. For this purpose I have used the German orthography for such sounds as have no alphabetic character in Spanish, as for example the sound of *w*, or the English *sh*. Whenever I use German spelling, it is specially indicated; in other cases words are given as spelled in Spanish.

1 March, 1878.

ARCHÆOLOGICAL AND ETHNOLOGICAL INVESTIGATIONS.

I LEFT New York April, 1862, for Aspinwall (Colombia), and remained ten months on the Isthmus, devoting myself to meteorological and other physical observations, and in collecting specimens.

From Panama I went to the city of Guatemala by way of San José. I made this my headquarters, from which I started on four excursions to traverse the country in various directions.

FIRST EXCURSION FROM THE CITY OF GUATEMALA.

THE first excursion I made was directed to that unexplored region lying north of the Province of Vera Paz which was reported to be inhabited by the Lacandones, a tribe that has never been subdued by Europeans. There prevails a general belief, mentioned in Stephen's "Incidents of Travels in Central America," of the existence of a large city still inhabited by the aborigines. My plan was, on reaching Salinas, the furthest settlement in the Province of Vera Paz, to sail down the river Chixoy to the land of the Lacandones, and thence, entering the river Usumasinta, to proceed to the "laguna de los Terminos," a part of Campeche Bay.

I took the road through Rabinal, in the neighborhood of which are the remains of two cities. Although one of them is but three miles distant from the town, I preferred visiting the other, which was described to me as the more interesting ruins. It lies in a northeasterly direction, nine miles from the town, and occupies the summit of three hills. The hill I visited is covered with many ruins of edifices, some of them tolerably preserved. I made a drawing of the most conspicuous one: its base is 100 feet long and 30 broad, its floor is elevated four steps above the ground, and the standing walls above this are about six feet high. It seems to have had ten entrances, four of which were in front, four in the rear, and one at either end. The interior space was 18 feet broad and nearly 90 feet long. All the buildings were of a quadrangular form, and constructed of thin slabs of mica-gneiss, lying in courses like bricks, and united by mortar made of lime and sand, the lime not forming a homogeneous mass, but being granular, some of the granules being larger than a pea. The walls had been plastered on the inside and outside. There was a quadrangular subterraneous space inclosed by walls, the use of which I do not venture to suggest. On the side of the hill were many arrow-heads of obsidian, and such other objects of the same material as might have served for spear-points or as knife-blades. Most of them were broken, but many were still perfect. Besides these implements of obsidian, two stones were found for crushing maize, of which to make *tortillas*. One of these stones was well preserved, and of finer

workmanship than those now used there. They also differed from the present ones in being curved longitudinally, while the latter are flat. There were likewise many fragments of pottery, which, however, did not seem to consist of burnt clay, but of a kind of burnt stone-earth, as the surface of the fracture was of a dark color, containing a great deal of mica. I have noticed in other places such fragments of ancient pottery, made of a similar material, containing mica.

On the slope of the hill at various places were the remains of a wall, the use of which could not be explained, unless it was to fortify the site. The hill consists of a kind of granite composed of quartz, felspar, and augite replacing the mica. The soil of the hill is entirely barren, and there is no spring of water; but traces of streams running down in the wet season are visible. The nearest brook is at quite a distance.

In Rabinal, I observed the primitive mode of barter. No smaller coin than a *cuartillo*—that is, a quarter of a *real*—$3\frac{1}{8}$ cents, being in use, various articles are employed for the subdivision of the *cuartillo*, namely a *quinto*, or the fifth part of a *cuartillo*. Five Cacao beans are most commonly offered for a *quinto*, and always accepted. For the cacao, as many red peppers (*aji*), or a few leeks, some salt, or a piece of soap, may be substituted. Such barter is carried on in almost all country places, where the products are cheaper, and even in the cities, but in these to a less extent, on account of the higher price of articles and consequently less need for a smaller coin than a *cuartillo*.

Leaving Rabinal, I went first to the city of Salamá, the capital of the department of Baja (lower) Vera Paz. I was told that there and in the neighborhood a kind of Mexican language is spoken; but it was impossible for me to get a vocabulary of it. I then passed the village of Taltic, which is, as I am informed, remarkable in this respect, that the language of its inhabitants is only spoken there and in four neighboring villages.

I proceeded next to the village of Santa Cruz, where I stopped for the night. There the municipality had less trouble in deciphering the letter of recommendation from the Corregidor of the Province, on account of the presence of the Secretary; while in Taltic, in the absence of that functionary, and none of the members of the Common Council being able to read, the *Cura* had to be sent for to read the letter.

The Secretary, who is likewise the schoolmaster, was very courteous, and treated me well, his hospitality even extending to a bowl of milk—a great luxury in most parts of Central America. The salary for his double functions amounts to six dollars a month, exactly the wages which a common laborer gets, with the difference that the laborer is fed, while the secretary and schoolmaster has to board himself. It is true, the qualifications of a village schoolmaster in Guatemala are not very extensive, nor his duties very arduous, no books being used. His function consists in hearing the few children who frequent the school, and whose number in some villages does not surpass a dozen, read and repeat, parrot-like, the proclamations which the municipality receives from the government. A similarly kind treatment I experienced from nearly all the village schoolmasters in Guatemala with whom I came in contact.

On the roads of the Province of Vera Paz, and on some roads in the other Re-

publics of Central America, are erected, every few miles, ranchos for the accommodation of travellers. They consist of a roof supported by six posts set in the ground. The northern part of this Province, called Alta Vera Paz, forming the limits of the State, and bordering on that free territory supposed to be inhabited by the Lacandones and other yet unconquered tribes, is very thinly populated. The dead in that section are buried within rectangular buildings in the shape of chapels, which are called *Eremitas*. At one end of the interior stands an altar, that is, a rough table covered with some cotton cloth. On this is placed the wooden figure of a saint or a cross, with other smaller crosses of different sizes at each side. All these are draped in various kinds of white or colored cotton, and adorned with flowers, which, however, are most of the time withered. Along the sides of the structure are planks resting on stones, forming benches about two feet high. Strangely enough, according to our notions, these *Eremitas* are used by travellers, as they frequently were by myself, as resting places, and especially to sleep in at night, as the tight walls offer a good protection against storms. The bench along the wall is also used as a bed. These semi-civilized people sleep without any scruple in the place where the dead are buried, while among civilized nations few persons would be found willing to pass a night in a graveyard.

Coming to the river Chua, I encountered the first aboriginal suspension-bridge. It was constructed of the stems of creeping plants, with three small trunks of trees to walk on. These trees are fastened together by slender creepers, and suspended by ropes of thicker ones, on either side, twisted from strong vines, and fastened to trees on each bank of the river. The bridge vibrates so much that but one person can pass over it at a time.

On reaching Salinas, which takes its name from strong saline springs there, the water of which is boiled to make salt, I did not find a boat to convey me on my expedition, nor men to accompany me, as was promised in Guatemala. I waited in vain a month for the arrival of some Lacandones, who are said to send every year one or two boats to obtain salt. My intention was, in case they should come, to go with them, but the story, as usual, proved to be false, and I was obliged to give up the expedition, at least for that time.

My visit to the Salinas was not without some good results. I became acquainted with a country and its inhabitants which had not been visited before.

The municipality of Coban claims these salt springs, which are leased. The lessee informed me that by using only a small proportion of the water, he makes 2500 pounds of salt daily, while if all the water were utilized, he could make 100,000 pounds. At the commencement of making salt there the rent amounted to eighty dollars a year; subsequently it was raised to a thousand dollars; and at the time of my visit the lessee had a four years' lease at five hundred dollars a year. By the terms of the lease, he has the privilege of taking from the settlements in the vicinity, by force, as many laborers as are needed. These laborers are compelled to work in the Salinas for one month; but as the country is thinly peopled, each laborer has to return after three or four months' rest. The wages of a common laborer are fourteen *reals*, $1.75, and of the men at the pan twenty *reals*, $2.50 per month. Both kinds of laborers receive in addition two meals daily, each meal

consisting of five *tortillas*, and some beans cooked in water. All the employés have to work every day, without any exception, from early morning till 9 o'clock at night. This incessant toil, without any remission, to which is joined the purely vegetable diet, causes the greater number of the men to get sick. They become affected with dropsy in the legs and often in the whole body.

During my stay, my gun supplied at times the table of the officials—four in number—at which I had a place—with fresh meat, which was very scarce in Salinas. In that way we got two Mexican turkeys (*curasoes*), a macaw, a monkey, and I shot once a serpent six feet six inches long, the meat of which was quite appreciated, being not inferior to that of a fowl. The most delicious vegetable eaten in this region is the baked tender sprouts of two species of palm, called *Paterna*. It surpasses in delicacy and tenderness any vegetable known to me. There was also a species of grayish fungus growing on decayed wood, more tender than mushroom, and of a finer taste.

The ordinary food of all the inhabitants of the Republic of Guatemala without any distinction, and of most of the Central American States, consists of boiled beans and *tortillas*. These two kinds of food are the almost exclusive nourishment of the country people and the laboring class; to which exceptionally is added some desiccated meat, a piece of cheese, or a fried egg. The preparation of the beans is different with the different classes; the poorer classes simply boil them in water without any addition to it, not even salt, while the wealthier season them with salt and lard; thus prepared, they form the principal dish of every repast.

The preparation of the *tortillas* is rather a complicated process. Shelled maize is boiled in water to which is added some lime, either slaked or unslaked, with wood ashes. The lime is added to whiten the maize, the wood ashes to make the separation of the hull from the grain easy. After the maize is sufficiently boiled, it is taken to the brook and washed repeatedly, to free it from the hulls as well as from the lime and ashes. Thus cleaned, a certain quantity of it is put on the stone made for that purpose, and crushed. This is done by a woman in a kneeling posture. The term crushing expresses better the operation of reducing the soft kernels of maize than "grinding." While the woman is crushing the kernels, a flat pan is heated over a wood fire; in this a certain quantity of the crushed maize formed into paste, and flattened with the palms of the hands, is put to bake. Both these operations, crushing and baking, are performed by the same person simultaneously; the baked tortillas are either placed in a part of the pan least exposed to the fire, or wrapped in a cloth and put in a basket, or *huacal*, to keep them warm, for they are only eaten warm, and if more are made than are consumed at once, they are warmed again before eating. This however is done only in travelling; otherwise they are prepared fresh before each of the two daily meals: no salt or other seasoning is commonly added to the *tortillas*. This is a circumstance of high physiological interest, proving the error of the general belief, in which most physiologists participate, that salt is a condiment of food necessary to sustain good health.

On festival occasions a kind of food, called *tamal*, is prepared, which consists of a piece of meat (generally pork), put in the middle of a quantity of paste, the

same as that from which the *tortillas* are baked, of the size of a dumpling, which is then flattened to the shape of a hand. It is then enveloped in a plantain leaf, tied with a string made of the fibre of the leaf, and put in a kettle to boil: when cooked, it is eaten hot.

Among the aborigines, water is handed round before each meal to the members composing the party. The females never eat with the males, but generally near the fire after the males have done. The water is handed for the purpose of washing the fingers, which have to take the place of our eating utensils, for which there is no occasion, as small pieces of *tortillas*, bent in the shape of a scoop, serve as a spoon or a fork with which to eat the boiled beans or fried eggs. Neither is there any necessity for a knife, the meat, if any is eaten, coming from the hearth in small pieces, which are torn apart by the fingers. There are no tables or chairs in the aboriginal dwellings; but the basket, or *huacal* containing the warm *tortillas*, wrapped in a napkin, is placed on the floor, around which the males sit on small low logs of wood. The beans, with or without any addition, are portioned out by the mother and handed in a small *huacal* to the males, each one of whom helps himself to the *tortillas*.

After the conclusion of each repast, fresh water is handed again, to rinse the mouth and to clean the teeth.

Fresh water is never drunk by the aborigines; chocolate or pinol, which I shall mention later, being used as a beverage at the meals and between times.

The inhabitants, not only of Guatemala but also of other parts of Central America, disrobe themselves entirely on going to bed. This is done by every one, poor or wealthy, those of the latter at least who inhabit the "country." Whether the wealthier class in the cities adopt the same custom, I do not know; but it was from the owners of haciendas that I first ascertained the fact. The reason given for this habit is the desire to escape from the fleas which, hiding themselves in the folds of any covering, would evade detection, and be the more troublesome.

All the salt produced in Salinas is carried away on the backs and heads of men, who come for it, (many from great distances,) and sell it at home or in a suitable market. In Guatemala, everything, with the exception of grain, vegetables, and sugar,—which are transported on beasts of burden,—is carried on the heads of men, there being no cart-roads of any length except that from the port to the capital. The articles to be carried are adjusted into a package higher than wide, and secured by a net called *red*. To the back part of this pack, near its base, is fastened a strap of raw hide, the two ends of which are attached to another strap called *tapal*, of the size and form of a large hand. The burden is placed on a stone or some other elevated object, and the man, stooping down, puts the *tapal* on the top of his head, and lifting his burden, trots off with it. When a pater familias going on a journey has baggage to carry, either his wife or one of his children accompanies him to carry his provisions. A professional carrier dispenses with such company, and secures his provisions on the top of the load. In most instances his food consists of *tortillas* and a few peppers as a condiment, to which exceptionally some boiled beans are added. Carriers always take with them in a little bag some meal of toasted maize mixed with scraped brown sugar

(*dulce*). A handful of this mixture put in hot water forms their only beverage, for they never touch fresh water, and whatever they drink must be warm. For preparing this beverage, every one carries with him a small iron pot. All these articles are put in a netted bag, called *matate*.

There are, at certain intervals on the road, places where the carriers rest during the day or at night. Such places are generally near to a brook, if there is one by the road, or to a *rancho*, where there are always some sticks of wood left glimmering by the previous party for making a fire and preparing the drink (*pinol*).

The usual weight of a man's load is from four to five *arrobas*—an *arroba* being fixed by law at twenty-five pounds. Occasionally, a man will carry a great deal more for a short distance.

To protect the load from rain, every carrier takes with him a kind of cloak (*soyacal*), made of the leaflets of a palm stitched together in such manner as to overlap each other and form a short cone with a broad base. This cloak is rolled up and secured to one side of the load, indicating the nationality of the bearer; for by this he is at once recognized as an inhabitant of Guatemala whenever he comes to the neighboring states.

This mode of carrying loads is undoubtedly the cause of the fashion in which men wear their hair, which is clipped short in front and on the top of the head but allowed to grow to some length on the back part. A similar fashion is observed by the Hanaks, the inhabitants of the fertile plain of Central Moravia. The hair on the top of the head of a professional carrier becomes much abraded.

Another result of my visit to the Salinas was finding in its neighborhood vestiges of the ancient population, in a pyramid built of blocks of squared stone. In the immediate vicinity of the salt factory is a large heap of fragments of pottery. It is impossible to divine the causes of such accumulations, notwithstanding I found similar ones in South America. I there also collected a vocabulary of the Egkschi language, which is related to the Quiché. One of its peculiarities is the frequent use of *R*, and of the guttural sound of *gk*.

A further result of my trip to this place was the correction of the erroneous belief in the existence of a city inhabited by aborigines. In crossing the Sierra Madre, from the heights of which it is alleged the city may be seen, I was able to ascertain the altitude of the former, which however is not great enough to permit the view of such a city, even if it actually existed at the distance assigned. I have likewise arrived at the solution of another problem, namely that concerning the existence of the Lacandones, or any other aboriginal tribe in the territory immediately north of Guatemala. An impartial consideration of all the accounts extant in regard to these tribes, and my own experience, force me to the conclusion that neither Lacandones nor any other tribes inhabit the territory just named.

Not being able to reach the Lacandones from Salinas, I concluded to cross the country to Peten, whence, I was told, I could reach them. But being dissuaded from the attempt on account of the inundation of the low country, through which I should have to pass during the rainy season, (which had already commenced,) I resolved to return to Guatemala. Profiting by the circumstance that one of the *mayor domos* was going to make the monthly tour to the different settlements to

obtain a new set of laborers for the next month, and that the negro carpenter, who had been at work in Salinas, was returning to Coban, his home, I joined them. I had to return in the same manner as I came—on foot,—for the greater part of the path leading from Coban to the Salinas cannot be passed in the saddle, and even a pedestrian is required to be constantly on his guard to proceed in safety. At two points where the path crosses the spurs of the mountain chain,—Voloneb, is placed a ladder made of a notched tree, to facilitate the climbing of the rock.

Our travelling party was quite interesting, each member of it representing a different race. The white race was personated by myself; the African, by the carpenter; the American, by the man who carried my luggage. The *mayor domo* was white and American mixed.

A little distant from the path, in a hut where we rested, was a woman suckling her son, five years old.

In the hamlet of Jaschkanal (German spelling), the Alcalde had a tree before his door, the fruit of which brought him five dollars every year. Really, there were three trees standing together, the interlacing branches forming apparently but one of the size of an ordinary pear-tree. One of these was a cacao, the fruit of which usually brought three dollars; another was a wild cacao tree, with a fruit of inferior quality, and the third was a calabash tree. From this single instance, the man must have known how profitable it would be to possess more cacao trees; nevertheless, he did not plant any, although they need no care except to protect them from the sun when they are first set out.

I took the road to San Pedro de Carcha, the largest town exclusively Indian in Guatemala; the number of its inhabitants is said to be 30,000. The greater part of the people belonging to this community do not live in the town, but on their *milpas* or maize-fields, on which they also raise beans, and occasionally other vegetables, such as pumpkins, etc., and where also they plant fruit trees or plantains. Many of these fields are some miles distant from their dwellings. The people live there either during the whole year, or the greater part of it, from the planting till after harvest, and come to the town only on festival occasions. This propensity for living secluded from any other community is general all over Central America.

San Pedro de Carcha is the richest curacy in Guatemala. The annual income of the bishop amounts to 30,000 dollars. His place is always filled by a Dominican friar, who appropriates from his income only a certain sum for his personal use; the rest he must transmit to his convent. His parishioners are very loyal, and do not annoy him much. It is different with the community of Santa Catalina, Istawhuacan (German spelling), the second town in size, population, and wealth. The income of the *Cura* in that place reaches to 25,000 dollars; but his flock, apparently the descendants of a different tribe, are not as docile as that of San Pedro, and are continually having difficulties with their spiritual adviser, who seldom remains longer than two years.

I went to San Pedro de Carcha in the hope of seeing the aboriginal writings which this town possesses. After repeated meetings which the Common Council held to discuss the propriety of my examining these books, which are in charge of a spe-

cial committee as trustees, my request was denied, although the *Cura* was in favor of it. The reason given for this refusal was the fear that some harm might befall the community, indeed, that the town might sink into the ground if they were shown.

The municipality of Coban likewise possesses some writings in the native language; but I was also refused an inspection of them for like frivolous reasons. It is supposed that these books as well as those at San Pedro contain nothing more than topographical indications, especially boundaries of the respective territories; and the reason for refusing any inspection of them is the fear that the right to some lands might be lost, which until now have been claimed by the municipality.

About three leagues from Coban, near the village of San Juan, is a cave, which is said to contain fine stalactites and some idols of the ancient inhabitants. It was impossible for me to find any person who would visit the cave with me, excepting the *Cura* of San Pedro; but he made the condition of his going, that the Corregidor of Coban should likewise go, protected by an escort of soldiers, as he feared the people might otherwise prevent us from entering the cave, which they venerate as the abode of their ancestors. The Corregidor excused himself from going on account of urgent business, and I lost a chance of examining the cave.

After leaving Coban, I visited some ruins of ancient edifices, which are on a hill near San Jeronimo, but little more than the foundation walls is visible.

SECOND EXCURSION FROM THE CITY OF GUATEMALA.

On my second excursion, I intended to penetrate into Mexico and visit the archæological remains at Otosingo, in the State of Chiapas. I had to travel through that mountainous part of Guatemala known as Los Altos, the highlands, where the most industrious inhabitants of that State are living. They raise grain—especially wheat, potatoes, and vegetables, and supply the various cities with flour and produce. They raise cattle, principally for the milk. The cows are milked but once a day,—in the morning; and only during the wet season, that is, the season in which there is any pasture. In the dry season, from lack of food, the cattle with difficulty sustain themselves. After each milking, the cows with their calves are allowed to go to the woods. In the evening the calves are collected and brought home to be put in an inclosure for the night. Early the next morning the cows are driven into the yard for milking; to every cow that is going to be milked, her calf is brought and allowed to suck once or twice; it is then tied to one of her forelegs to assure her of its presence and to make her believe it is sucking, while in reality she is being milked. It requires two persons to perform this operation, one to milk and the other to steady the head of the cow, which is tied. From the milk, which is mostly left unskimmed, cheese is prepared, which is used all over the country.

The principal produce of the Altos is wool. Sheep are extensively raised, for the most part on the elevated plains, some of which are 9000 feet above the sea. Some families own as many as four and five hundred. There are several varieties, some white and some black, many of the latter having four horns. The owner of the sheep manufactures those articles of wool which are needed in the family. The

first in importance and quantity is a kind of blanket, used in the daytime as a mantle and at night as a covering; the second is the material for jackets, and the third is used as a sweat cloth for riding animals and beasts of burden. These articles are used not only throughout the Republic of Guatemala, but also in the neighboring States, and they are even exported to South America.

One of the communities noted for raising sheep and cattle which I visited is at Serchil, 9000 feet above the sea. All the inhabitants, who live in dwellings more or less distant from one another, are weavers. They have not yet learned to construct chimneys to their kitchens, in which they stay working all day. In consequence of this many suffer with sore eyes, as the kitchen is always filled with smoke, the fire burning all day on account of the chilly air.

A very noteworthy product of these regions is a variety of maize, the ears of which are a foot long, with eighteen rows of large pale-yellow kernels. It ripens in elevations where the thermometer does not indicate over seventy degrees Fahrenheit, and in less time than any other variety. Its green stalk contains so much saccharine substance that it is chewed by the inhabitants in the same manner as the sugar-cane in hot regions. The immense value of this maize for countries where the ordinary varieties do not mature, and its importance as a fodder plant, were to me so striking that I wrote about it and sent a small quantity of it to the Department of Agriculture at Washington.

The manufacturing in Los Altos is done by the mixed race, known as *ladinos;* the majority of the inhabitants, however, are pure Indians, whole communities being exclusively composed of them. The love of independence is shared by all in a higher degree than in other sections of Guatemala. In the Indian communities it becomes evident by their distrust and hatred of every foreigner, manifested on all occasions. The ravages of the cholera were for example attributed to the poisoning of the springs by foreigners, and some travelling Englishmen were murdered on that account. I have experienced this animosity on several occasions.

In the village of Atitlan, which I visited expressly to ascertain whether the lake of the same name has any outlet, I was questioned as to my motives, undoubtedly from the fear that I might profit by the water, or in some way injure it. The inhabitants, purely Indian, were engaged in the preparatory celebration of the coming feast day of the village patron, Saint James, with the dance of the Moors, in costume. This costume consisted of a head-dress, representing either a turban, or a cap with feathers, or a crown,—a short mantle, mostly of silk, adorned with spangles, and an imitation of gold braids, hanging from the shoulders, fringed pantaloons, and a Toledo sword borne in the hand. The dance itself consisted in walking on the floor of a spacious building in file, with measured steps, very much like the Polonaise. The assembled company was regaled with *chicha*, a kind of beer brewed from maize and chocolate. This dance is very much in favor with the Indian population of Guatemala, and is practised in large villages on the occasion of celebrating the feast of the village patron saint. The custom was probably acquired from the Spaniards.

One of the villages most noted for its enmity against foreigners is Todos Santos. All its inhabitants are Indians, with the exception of two weavers of the mixed

race. There I was hung in effigy by the constables (*alguacils*). Taking the town hall, (*cabildo*), as is customary, for my quarters, the *alguacils* had, by virtue of the letter of recommendation from the government, to attend to my wants. Out of spite for this, the people suspended one of their official staves, which was six feet long with a rounded top and a cross on it, and called my attention to it, swinging it and crying out "*tata.*"

The village of Tacena furnished an evidence how favorably the Indians can be influenced by a well-meaning person. Through the efforts of the curate there were four schools; one of them for teaching music, and the others for sewing. In consequence of this he was able to say mass, accompanied by an orchestra performing the works of Mozart and other great composers. He himself was instructing two boys in carpentry.

Entering the State of Chiapas, I advanced as far as the *hacienda* Espiritu Santo. I had to wait two days till the *mayor domo*, who was living in the building with his wife and a cow-boy (*vaquero*), was obliging enough to transport me back to the nearest estate. On the *hacienda* Espiritu Santo were 1500 head of cattle, and notwithstanding this number, not one drop of milk could be obtained, nor any butter or cheese. The food consisted of *tortillas* and sun-dried meat. There was, of course, not the least sign of any kind of fruit. The cattle are raised for the sole purpose of being sold to the butchers in the distant cities of Guatemala. During my stay the people asked me what kind of work I could perform, and could not believe that I was unable to cut even a pair of pantaloons, in the performance of which the woman was engaged, and would have liked my assistance. Another mystery to them was that there was nothing in my trunk to sell.

In the State of Chiapas are very few communities; the most of the country is divided into large estates, exclusively for raising animals, cattle as well as horses and mules. A great number of these, if not all, are exported to Guatemala, where they are considered to be of a superior breed. On one of the other estates is a small settlement where the men have to perform all the work required to be done, and are only tenants, not owners, of the land they occupy.

Having been convinced of the impossibility of my reaching Otosingo, in the disturbed condition of the country, I fell back on the *hacienda* La Nueva, from which I first started, in order to get other animals, and a guide to conduct me in another direction to Guatemala. This time I got as far as the *hacienda* Rincon Tigre, where my guide deserted me, for fear of being pressed into the revolutionary army, the headquarters of which I had to pass. The proprietor of the *hacienda* was so obliging as to have my luggage transported the following day to the next village, Agua Sarca, in Guatemala, the headquarters of the revolutionary general; but he would not sell me either horse or mule, saying, he had none for sale, although quite a herd of them were in sight.

The General received me hospitably in the *cabildo* of the small village where he was quartered. His staff consisted of about half a dozen young men, and he was staying in Agua Sarca for the purpose of collecting the men and animals necessary for the contemplated assault on the capital of Chiapas. The men were busily engaged in shoeing horses and mules, and forging lances, which

were almost the only weapons of the common soldiers. The General was very anxious to buy my gun, but was unable to give the price I set upon it, namely, a good riding mule, of which he had none to spare. Besides *tortillas* and beans, deer's meat was the only food they had to eat; deer are plenty in that section of the country. Here, for the first time in my life, I saw a herd of them, allowing me to approach near enough to kill them with small shot, which I did not do.

The next morning we started from Agua Sarca, in opposite directions, I into the interior of Guatemala, and the General with his staff and force of twenty-eight men, all mounted, under the sound of the bugle, for Ciudad Real, where one hundred and eighty men were awaiting him. With this force he calculated to capture San Aristobal, the capital of Chiapas; and I heard later of his success.

Farther on, I visited the ruins of some ancient edifices on the plain of Whuerohuetenango (Germ. spell.), and likewise those of Pabyaj, on a hill near Sajcap. The latter were constructed of thin slabs of mica-gneiss, lying in courses like bricks, united with mortar, and plastered similarly to the remains seen near Rabinal. It is commonly believed there that a subterraneous passage connects these edifices with the former palace of *Quiché*. I was informed of the existence of the walls of a church some twenty miles distant; I did not go there, thinking it to be the ruins of a modern structure.

The brother of the Alcalde, in San Martin Schilotepeque (Germ. spell.), showed me an "idol" carved in stone, and a kind of flute of burnt clay. Both these relics he had gotten near the river Pyscaia, where are the remains of ancient Mischko (Germ. spell.).

The curate of San Juan Sacatapeques, who possesses the original of the celebrated grammar of the *Quiché* language, and is well versed in the manners and customs of the people, assured me of the still existing custom of immolating a human victim in honor of the god of the mountains, in the spring of the year,—that is before the commencement of the rainy season. On this account no person ventures to go out unaccompanied in the months of January, February, and March. He said also that among the Indians the opinion obtains that foreigners eat children. This prejudice is made use of to frighten children.

The custom of making offerings by burning incense is still practised, as I have seen it done in front of churches.

I received from the curate of Jacana the statement that the inhabitants of that village, though baptized, are still greatly addicted to the customs of their ancestors. The curate assured me that they still sacrifice cocks and sheep, and he suspects that they even immolate children. In the vicinity of the village is a "mound" on which are numberless small wooden crosses, the parents planting there a cross for the benefit of each child. The curate added that, in spite of all his endeavors, he could not succeed in eradicating these customs. During my presence there two couples of parents came to the curate, the one with a girl five years old, and the other with a boy eight years of age; they wanted him to marry them; but he tried to dissuade the parents from such an act. He informed me that the custom exists in that part of the country of marrying children at the age of ten and twelve years; the married parties remain with their respective parents until they are grown up.

With the curate of Sacatapeques was living a boy three years and eight months old, who was accustomed to smoke a large cigar after his dinner. "*Les extrêmes se touchent*," in Vera Paz, for I found a mother still suckling her boy five years of age, and here was one not yet four years old accustomed to smoking!

THIRD EXCURSION FROM THE CITY OF GUATEMALA.

The main object of my third excursion was to proceed as far as Copan, in Honduras, in order to visit the remarkable sculptures there, known by the description of Stephens and others. I intended likewise to visit the sculptures at Quirigua, which, until now, have been but very imperfectly described, and to inspect the silver mines of Aloteseque, situated in that corner of the country where the boundaries of three states, Guatemala, San Salvador, and Honduras, meet.

To accomplish this, I had to traverse the southeastern part of Guatemala, the inhabitants of which differ somewhat from the rest. They are but rarely of pure Indian blood, generally of a mixed race, not devoted to manufacture, nor to agriculture, to any extent. In consequence of belligerent parties having frequently traversed that section, and on account of frequent wars between the Republics of Guatemala and San Salvador, the inhabitants have become greatly demoralized, frequently committing theft, and even murder.

On this journey I passed through Esquipulas, the most noted shrine in Central America, to which pilgrims flock from distant regions, on account of its possessing a black image of Christ, to which the most miraculous deeds are attributed. On the bridge, constructed of masonry, over the brook—which becomes a torrent in the rainy season—are four monoliths, two of which are low reliefs; the third represents, statue-like, a human figure, and the fourth the head of a wild animal, which, as usual, is taken to be a lion. Another stone, sculptured in low relief, is lying near the *cabildo*. They have all been brought from Copan.

The village of Copan is better known for the tobacco grown in its vicinity than for its archæological treasures. This tobacco is considered at least equal, if not superior, to that grown on the island of Cuba, and is imported to that island to be sold as Cuban tobacco. Fugitives from Guatemala form a marked element in the population. It is the general custom of the inhabitants to pass the days succeeding the harvest and sale of the tobacco in drinking, without any intermission, as long as they have any money or can get credit for some *aguardiente*, which is rum made from the sugar cane. These orgies are accompanied with routs and fights; on the day of my arrival four men were wounded in such a drunken brawl. I was assaulted by a drunken man with a *machéte*, and saved my life only by retiring to my quarters.

From Copan I proceeded to Tyabal, the port on the Atlantic side of Guatemala. Returning, I visited the archæological remains at Quirigua, which in interest are not surpassed by those of Copan. They are situated some miles distant from the village of that name, in the midst of the woods, no path leading to them. The plantains which are found in these woods, quite apart from the sculptures, prove

the existence of a former population in this region, for plantains never grow wild. Their presence there shows that circumstances have favored their propagation for a long period of time.

These sculptured monoliths are of various sizes and shapes, the tallest being of a columnar form, and about twenty-five feet high, while others do not exceed twelve feet. Both of these classes are three feet wide and two feet deep, and have four sculptured sides. The narrow sides of all the columnar monoliths are covered with hieroglyphics, resembling those found in Copan. Both the front and rear bear human figures, sculptured in low relief. The persons represented on the rear of those monoliths which are twenty-five feet high, do not seem to have occupied the highest social position, judging from the greater simplicity of their dress and ornaments; while those in front appear to have been the chiefs of tribes, or of the nation. Their head-dress consists of animals, placed one above another, resembling a tiara. They have ear-rings, and hold in the hand a sceptre or staff, on the top of which is a diminutive figure in a sitting posture. The upper part of the body is clothed with a coat, the sleeves of which are wide, and ornamented with a deep cuff, on which are two buttons. They also wear a kind of tunic, reaching below the knee in front, with a sash descending to the ankles. The feet are covered with regular shoes. But the most remarkable fact is their having a beard on the chin in the fashion called "goatee."

On the monoliths twelve feet high are represented figures in profile, with ape-like faces, the finger of one hand touching the tip of the nose. They wear breeches, and the right leg is bent at the knee, the foot resting on the toes, as if in the act of dancing.

Two of the monoliths are four feet thick, five feet broad, and from seven to eight feet high, with rounded tops, the whole representing a human figure whose head is covered by or rather inclosed in the mouth of a monstrous animal. The tops are ornamented with arabesques, and so are the sides, on which are likewise hieroglyphs.

All these monuments are of a gray porphyry. One of the columnar monoliths is lying on the ground, and another stands obliquely, and will most probably fall. All the sculptures are covered with moss, dirt, and climbing plants; indeed, the roots of a tree growing on the top of one have split it in two.

Besides these sculptures, there are remains of an architectural structure, formed of steps like terraces, similar to the remaining part of an amphitheatre which surrounds the sculptured monoliths, the steps having been used as seats. These steps are formed of quadrangular cut stones, some of a dark gray porphyry, and others of white marble.

These remains are surrounded by trees which do not permit a general view of all at once. It is not improbable that other remains yet exist in the woods; it is in fact supposed that there are such.

It is strange that, besides a drawing made by Mr. Baily, of Tyabal, of the front side of one columnar monolith, these sculptures have never been represented, notwithstanding their interesting character. I resolved to return with my photographic apparatus, and to make copies of them. To do this it would have been

necessary to cut down the trees and to clean the sculptures, a task exceedingly difficult to perform in a country without ladders, and where it is hard to get laborers to perform even work they are used to, and almost impossible to make them do what they have not done before. The sculptures, as I said before, are some miles distant from the village. It would have been necessary, therefore, to erect a small building on the spot for the workmen and myself, which, on a level ground in a region where the rain falls every few days, would have offered serious difficulties. All this work I should have had to perform or superintend myself. Finding that the task of taking photographs of the sculptures would prove to be beyond my means and strength, I had to give it up with regret.

The map of Guatemala is dotted everywhere with signs of ancient ruins, most of which have not been visited by competent persons, and they are noted down from simple hearsay. It is therefore possible that valuable discoveries might still be made. In the elevated plain on which the city of Guatemala is built are many "mounds;" some of these have been examined, but nothing was found except some pottery, and that mostly broken.

FOURTH EXCURSION FROM THE CITY OF GUATEMALA.

While in the city I received information of the existence of newly-discovered ancient sculptures at Santa Lucia Cosumalhuapa. After having ascertained the truth of this statement, I started on my fourth excursion in the republic of Guatemala with the intention of visiting these relics.

Before reaching Santa Lucia I visited the sculptures in the plain near the *hacienda* Los Tarros. They are of very great interest, although but three in number; they exhibit fine workmanship, and represent human figures in high relief. They are five feet nine inches high, three feet seven inches broad, and one foot eight inches deep, standing on a base ten inches above the ground.

Two of these figures have ear-rings, and their heads are covered with a kind of turban, on the front of which three leaves and the fruit of cacao form an agraffe from which plumes ascend. Below the agraffe is a bow-knot. From the back, between the shoulders, extends a narrow staff or band, which bends over above the head, and to the front end of this a tassel is attached. The head of the third figure, of advanced age, stands out entirely free. It is covered with a cap fitting tightly, and the breast bears an ornament resembling a coat of mail.

Besides these sculptures are two fragments of a round column, one foot two inches in diameter, and two large square stones, eight feet long, and four feet five inches wide, nearly buried in the ground, only one side being exposed to view, which not being carved, forms probably the rear of sculptures which are concealed.

Finding the sculptures of Santa Lucia of far greater interest than any which had previously come to my knowledge I resolved to make drawings of them. They form the principal subject of the present essay. But before giving a detailed account of these remarkable remains I will continue the general sketch of my explorations.

FIRST EXCURSION FROM SAN SALVADOR.

I removed my headquarters to San Salvador, the capital of the republic of the same name; and from this place as a centre made several excursions. My first was to reconnoitre the republic of Honduras. Owing to the indolence of the inhabitants, there is a continual scarcity of food; although two crops are produced in one year. Maize is not raised in sufficient quantity to last from one harvest to the next, and the people are mostly obliged to use the new crop before its maturity. In consequence of the scarcity the price is very high, a *medio almud*, about a peck, ranges in price from three *reals* (thirty-seven and a half cents) to eighty cents. This latter price I paid in Tegucigalpa, the first city of importance, in a commercial view, in Honduras. A short time before my arrival the price of the same quantity was one dollar and twenty five cents. The same cause produces the great difference in the price of meat. A pound of beef costs but three cents, while a pound of pork costs twenty-five cents; even butter is one third cheaper than lard, and the price of a small pig is equal to that of an ox. The reason of this is, that cattle are raised without the slightest labor, while hogs have to be fed, and the maize to feed them with has to be raised. On some cattle-estates in the department of Olancho hundreds of cattle perish every year from want of food in the dry season, nevertheless the proprietors do nothing to prevent this loss. As it does not cost anything to raise the cattle they may not consider their death as an actual loss, but only as the privation of a future gain, which they would have realized by their sale.

Fruit of any kind is very scarce in Honduras; not because the people do not like it; on the contrary, they are, like all other people, fond of it, and wherever any fruit is grown, it has to be watched to prevent its being pilfered. This custom the inhabitants of Honduras have in common with those of all Central America. For this reason on some estates in Honduras and other parts of the country, for the sake of ornament, orange-trees are planted which bear a bitter fruit.

In the parts of Central and South America which I visited, a superfluity of starving dogs are kept, with the understanding that they are not to be taken care of, but must provide for themselves in the best way they can. On this account everything eatable must be kept out of their reach; and an idea of their starving condition can be formed from the fact, that on the *hacienda* Agua Azul, which I visited for the sake of studying the lake of Yojoa, the dogs ate in the night the reins of my bridle.

These conditions of the country render travelling very tedious. The traveller is obliged to carry with him provisions, as in some places he cannot get anything except a few *tortillas*, and those only as a great favor; and for his beasts sometimes absolutely nothing, as I have experienced on several occasions, when the pasture was all dried up and no sugar-cane or maize was to be had. The lowest price I paid for maize was in Denli, giving twenty cents for a *medio almud*, which was still too high for a country producing two crops a year. In one village the bananas were so abundant that I paid but three cents for a bunch; and passing the *hacienda*

Chaguapa I had the pleasure of seeing them cutting down the bushes growing on the pasture-ground.

The inhabitants of Honduras are almost entirely ignorant of the ancient remains and languages of the country. This is the more surprising as it must be supposed that Honduras was not less populous than the other states of Central America. The information I received was exceedingly meagre, and only the site of ancient Olancho was pointed out to me. I did not visit it because of its great difficulty of access. If I did not meet with any archæological objects I had at least the opportunity of enlarging my ethnological knowledge by becoming acquainted with various tribes of the aborigines, and obtaining vocabularies of their languages.

The first aborigines I met belonged to the tribe of the Xicagues. Some descendants of this tribe are settled in the hamlet Rio Comayagua. Further on, in the department of Yoro, I met two Xicagues, who seemed to have been little affected by civilization and were yet in a primitive state. In Yoro, the capital of the department of that name, were twenty Xicagues working for their *curador;* and from others who came to the town I collected a vocabulary of their language.

The Xicagues differ in the form of their bodies from all other tribes of Central America. Their stature, on the average, being equal to that of Europeans, is greater than that of the other tribes. Their skin is of a lighter color, and their features resemble more closely those of the Caucasians, having a more pleasant and intelligent expression than any other tribe of this region known to me. Both of the sexes wear a kind of apron, made of the inner bark of the Caoutchouc tree. That of the women reaches around the waist and the ends hang down from the hips to the knees; that of the men is but a foot wide, with a slit in the middle, through which they put the head, the front and back part reaching from the shoulders down to the knees. These two flaps are attached to the body by a strap of the same material fastened around the waist. By another narrower strap, tied around the head, they secure the long black hair, parted in front and floating down to the shoulders.

It was but recently that the Xicagues were christened and collected into permanent settlements. This was effected by the efforts of a Spanish missionary, who gloried in having erected, during the eight years of his labors before my arrival, twenty-two churches, near which he induced many thousands of Indians whom he had christened to settle. His converts belong to the tribes of the Xicagues, Peschkas (Germ. spell.), and Moskitos, living in Honduras and Nicaragua. It was in Nicaragua and amongst the Moskitos that he first commenced his missionary labors.

The Xicagues are under great obligation to this man, who has liberated them from a kind of slavery, in which many of them were kept in spite of the laws of the country by which slavery was abrogated. Like all other primitive people the Xicagues were improvident. They did not cultivate the soil, nor raise animals, at least no large ones, as cattle or horses. When they desired one of these they pawned their freedom for it, and as they were never able to pay, many of them were held in perpetual slavery on that account. The missionary succeeded in putting a stop to this mode of traffic by securing the appointment by the government

of a certain number of men as curators (*curadores*), one for each district, who are subjected to a chief curator. Their duties are to transact all commercial business, such as selling and buying for the Xicagues, who in return have to perform some work for the *curador*. The two principal articles of their commerce are *sarsa* and tobacco. One of the three species of *sarsa* is *parilla*, known as "Sarsaparilla." They collect the *sarsa* for their own benefit, and the tobacco they plant for the benefit of the church, which, of course, is the missionary.

The northern part of the department of Olancho in Honduras is inhabited by a tribe of aborigines by the name of Peschka (Germ. spell.). I passed twice the modern village of Dulce Nombre, in which all the inhabitants belong to that tribe, and only a few of them understand Spanish. In former years they lived in a village four miles to the north, named Culmé, which is at present entirely deserted. It was in the second quarter of this century that the inhabitants of Dulce Nombre were baptized and induced to form a settlement. The greater part of this tribe are still living scattered on their plantations in the woods; they are more numerous near the Atlantic coast, and many of them are not baptized, but all manifest a peaceful disposition.

The Peschkas are of the ordinary size of Central American Indians, and their stature is less than that of the Xicagues. They are also of a darker complexion than the last named. They are industrious (for that country), and principally agriculturists. Besides maize and rice they raise plantains, bananas, sweet potatoes, yams, and yucca. This last, the tuberous roots of *jatropha manihot*, forms their principal food, being consumed like bread, and replacing the *tortillas* of the other inhabitants of Honduras. It is prepared in the following manner. The root is first boiled and mashed, forming a kind of paste, which is allowed to ferment a little, by which it acquires a sourish taste. It is then divided into pieces of the size of a fist, which are rolled out in the shape of a hand, and wrapped in plantain leaves until used. It seems that the *tortillas* never enter into their diet, as their language does not possess a term for them. Besides the *yucca* they plant other kinds of tuberous roots. Chocolate is not their usual beverage, as in Guatemala, but a drink called *pinole*, prepared from the meal of toasted maize put in boiling water and sweetened with *raspadura*, a dark, unclarified sugar. This *pinole* is also used in those parts of Central America where cacao is scarce. In every hut through Central America is a pot with boiling water standing at the fire, always ready for the preparation of chocolate or *pinole*, which is offered to every visitor.

The skin of the greater number of the inhabitants of Dulce Nombre is spotted; darker spots alternating with those of a lighter color, irregular in shape and size. The darker spots represent the normal color of the skin, while the lighter ones are the effects of a cutaneous disease, which is probably of a syphilitic character. This phenomenon is not confined solely to the inhabitants of Dulce Nombre, but many of the different tribes are subject to it. The first case that I observed was in the state of Chiapas. The family of the overseer of the *hacienda* Tres Cruces, consisting of the father, mother, and a daughter, were affected with it. In Juticalpa I saw a man on whose skin the normal dark color had entirely

disappeared with the exception of a few spots; the whole having a pinkish color similar to that in a congestive state of a Caucasian.

The greater part of my vocabulary of the Peschka language I collected in Dulce Nombre.

In Olancho, the eastern section of Honduras, I proceeded as far as Colonia, the last inhabited *hacienda* in that region. It being impossible to get beasts of burden or a guide, I had to return. Colonia received its name on account of the attempt of some North Americans to establish there a settlement; which failed on account of disease and death amongst the colonists. Besides this, some other attempts have been made by Americans to settle in Honduras. One of these was with the intent of gold-washing in the river Guayape, which failed in consequence of discord amongst the members. I met with the remnants of another colony, which attempted to settle in Nacaome, near the bay of Fonseca. The members of this colony were advocates of radical principles, who emigrated from the United States to practise them in a more congenial country. It failed likewise, Nacaome being one of the least suitable places for colonists from northern latitudes.

In Juticalpa, the capital of Olancho, I met with a man who gave me some words and sentences of the Moskito language.

It might not be out of place to mention some of the many difficulties which a person has to overcome in his linguistic researches in those countries. Supposing he is fully versed in the Spanish language, the first difficulty he encounters is the finding of a native who is expert in his own tongue and also in the Spanish. After securing a faithful interpreter another difficulty arises. Persons of the same tribe, from different localities, often give different terms for the same thing. I experienced this on all occasions, but most strikingly in my researches in the Nawhuata language. In such case it is often possible to discover a similarity in the expressions, the diversity of which can be attributed to local influences; but sometimes the discrepancy is so great as to indicate that the terms belong to various idioms, and the question arises which of these terms belongs to the idiom in question.

The investigator has to encounter another difficulty in the mistrust and hatred which the aborigines bear, though sometimes concealed, towards all foreigners. They are incapable of comprehending that a man can come from a great distance, and suffer all kinds of privation and exposure, besides the expenses of travel, solely for the purpose of studying their country and to get acquainted with their language and mode of living. They are convinced that he submits to all this for the sake of gain. Envy and hatred prevent them from assisting in his labors; for, why should they do that which brings them no profit? They are also apprehensive that they may suffer some injury from such investigations. To this kind of feeling I must ascribe the instances in which I have experienced opposition or refusal of aid in my researches; as for instance the refusal of the woman in Rio Tinto to give me words of the Moskito language. A similar refusal I experienced in the hamlet of Posolteguia, in Nicaragua, from two women, who, as I was told, were still able to speak the language of their forefathers. Another phase of this feeling I met in the village of Panchimalco, in the republic of San Salvador, where the interpreter sought to deceive me by giving wrong terms. I may mention here also

another instance of this mistrust which occurred in Sanajaba, a village in Guatemala, where a man showed me some pyrites, saying that he would come next morning and take me to the place where a quantity of precious metal was to be found; thinking the pyrites to be gold, in which belief he was confirmed by my willingness to go and look at the place. He did not come, but another man conducted me to the spot, where we found the first man on the slope of the hill, covering the pyrites with dirt. After the investigator has overcome all these difficulties, still another important one stares in his face. It is the writing down of the sounds he has heard. No alphabet of the European languages has letters enough for expressing all the sounds. For example, the Spanish (Castilian) and the French alphabet have no letter for the English sound of *w*; nor the former that of the French *ch* or English *sh*; while the French and English cannot express the German *ch* or Spanish *j*; the French and Germans have no sign for the *ch* of the Spaniards and English, and so on. Even if an alphabet were compiled for the necessary signs, then comes the impossibility of faithfully representing the pronounced sound. This last difficulty is encountered in apprehending any language. The French nasal *en*, the English *th*, the German *ch*, or Spanish *j*, can be only acquired by the ear and not by the eye. The same is true with the languages of Central America.

After leaving Dulce Nombre I arrived in the city of Danli, capital of a district of Olancho. I remained there some time making researches in the idioms of the Tuachkas (Germ. spell.) and Moskitos. The aboriginal tribe that inhabited the territory around Danli at the time of the Spanish conquest has entirely vanished, and with it the language spoken; so that even the name of both is unknown. An inhabitant of Danli, owner of a *hacienda*, an intelligent and observing man, wrote me that "the Indians of this territory had entirely disappeared, not because the Spanish conquerors had destroyed them, but because they had retired more and more towards the east in proportion as the Spaniards took possession, until they had quit the entire district." In his communication he gives the following six words, the only ones still extant of the language of the vanquished tribe, which have been preserved by tradition for generations: *schutsche* (Germ. spell.), signifying "flower;" *dan*, "mountain;" *nagma*, "sand;" *apa*, "stone;" *whuao* (Germ. spell.), "tree;" and *li*, "water." It will be seen from these six words that the language had some relation with the Nawhuata. Two of the six words, *schutsche* and *whuao*, are almost identical with the Nawhuata *schutschit* and *kuawhuit* (Germ. spell.). Although in pure Nawhuata the term *tepet* signifies mountain, the inhabitants of the villages Komasawhua (Germ. spell.) and Chiltiupan, who profess to speak the Nawhuata use, the former *kuztan* and the latter *kuchtan* (Germ. spell.) for "mountain." Both these words end with *tan*, which, like *dan* of the ancient tribe, signifies "mountain;" while the first syllables *kuz* and *kuch* are prefixes. I do not venture to decide whether the two terms, *kuztan* and *kuchtan*, are of Nawhuata origin, which is rather doubtful, or whether they are the remains of an idiom of a tribe inhabiting the Balsam coast, which has exchanged its own language for the Nawhuata. The term *apa*, "stone," is likewise related to the Nawhuata *apan*, which is sometimes used to signify river. *Li*, "water," is identical with the same term used by the Tuachkas (Germ. spell.) and Moskitos to express water. This proves an influence of these two neighboring tribes on the language of that which has ceased to exist.

From Danli I went to Dipilto, and the mineral district in its vicinity in Nicaragua. In Dipilto I was pleased to find an American cottage painted white, and surrounded by a picket fence; the property of an American family, who likewise owned, on the brook passing in front of the cottage, a saw-mill; this was, however, idle, the owner of it having gone to Potosi, to work in the silver mines.

Re-entering Honduras I travelled around the beautiful bay of Fonseca to the city of La Union, the principal port in San Salvador on that bay. From La Union, directing my steps to the capital of that state, where I had my headquarters, I visited the ancient ruins situated on the *hacienda* Opico, near the foot of the volcano, San Vicente, and the city of the same name. I did not find there what I was told I should, gigantic sculptured stones, and subterraneous abodes, or passages, but discovered simply the foundation walls of some edifices, and superstructures of others erected with quadrangular hewn stones. These remains were arranged in streets, which indicated the existence of a former population of considerable extent. The ruins of the largest edifice show that it covered a space of two hundred feet square. At the *hacienda* Opico was preserved a stone for crushing maize, with fine filigree work, and a head of a wild animal at its upper end, which is said to be that of a lion. From this stone the ruins have received the name, *Leon de Piedra*, stone lion.

SECOND EXCURSION FROM SAN SALVADOR.

On my second excursion from San Salvador I visited Nicaragua, which offers an extensive field for archæological explorations. Disembarking in Corintho, the principal port of Nicaragua on the Pacific, I went first to Leon, the capital, to arrange the preliminaries of my travel, such as buying a horse, getting governmental protection in the shape of a letter of recommendation to the authorities, and information about the most interesting localities to visit, and the best mode of reaching them.

My visit to Leon happened at the time of the Easter holidays; and as there is no travel in Passion week I had to delay my journey. This gave me the opportunity of witnessing the celebration, which consists of public processions in the daytime and late in the evenings. In these processions are carried wooden images of different saints. The favorite ones are those of Christ, the Virgin Mary, and San Benitto. These three represent the three different races inhabiting that country. Although San Benitto was an Italian, he was there represented as a Negro with black face, hands, etc. The color of the Christ was that dusky, copper color of the aborigines, and the Virgin Mary alone represented the Caucasian race by a pale-colored body. In the procession at night the men appear in women's attire, in a white dress trimmed with black ribbons, a white kerchief covering the head and tied under the chin, and with a burning wax candle in the hand. The procession on the night of Good Friday is the favorite one, and most numerously attended; the people flocking together from the surrounding country to participate in it. The candles used on these occasions are of a brown color, made of the wax

of the native bee. This was the first time I observed this wax utilized in Central America.

From Leon I directed my journey to the district of Metagalpa, of the department of Segovia, having already visited the other mineral district of this department from Honduras. In the vicinity of the city of Metagalpa the path led me alongside a hill, on the top of which I was informed are the ruins of a former fortification. I could not ascertain whether its origin was ancient or modern. The aborigines in this district, who are devoted to agriculture and who use cattle as beasts of burden, as in East India, have almost entirely lost their native tongue, and only preserved its name, *Popaluca.*

In the city of Metagalpa, head of the district, I met with nineteen families, comprising about ninety persons, who had emigrated from the State of Missouri, to seek a better home in the woods of Nicaragua.

Leaving Metagalpa I went to the adjoining province of Chontales. Arriving at Acoyapa, the capital of the province, I received, in answer to my inquiry as to the existence of any relics of the ancient people, the usual reply, "Nothing of the kind is found in this place." In my first walk through the town, however, I found a sculptured figure forming the corner stone of a house, and subsequently observed the uneven surfaces of two pieces of rock buried in the middle of the square of the town, which proved to be sculptures in low relief, representing labyrinths. One of them measured three feet by five feet six inches in its greatest width, and the other three feet by five feet; both were, however, irregularly shaped. Two other stones, likewise irregularly shaped, were found buried in the street. The sculptures on the visible, uneven surface represented what might be called arabesques in low relief. By inquiring I discovered other sculptures. One of them represents the head and breast of an alligator; another the upper part of the body of what I took to be a woman, of life size. The hands of her bent arms crossing over the breast touch the shoulders. In the bank of the brook, near the city, was a piece of rock irregularly shaped, the upper portion of its surface being sculptured. On account of being covered by moss and the growth of the trees around it, it was impossible to make out the subject of the sculpture, with the exception of a tail of a fish. There were also three monoliths which the owner has brought from his *hacienda*, some leagues distant. Two of these represented the upper part of the human figure, from the head to the waist, of colossal size; the remainder of the body being wanting in both instances. The head-dress of these two figures consisted of a human head; this occurs very frequently in ancient sculptures. All of them were somewhat injured, and did not show the high degree of art, either in conception or execution, which I found in the sculptures of Copan, Quirigua, and Santa Lucia. The drawings of the sculptures I made were unluckily lost, together with the memorandum book in which they were drawn.

Besides these sculptures were regularly hewn stones in different parts of the city; a testimony of former edifices and population.

On inquiry I was informed that at the distance of some leagues many sculptures were to be found. This is the usual way in which the question of a traveller is responded to in those countries, either an absolute denial is given, or an exaggerated account, which latter mostly proves less worthy of credit than the former.

From Acoyapa I went first to San Ubaldo, a port on the eastern shore of lake Nicaragua; then returning I proceeded across the isthmus of Tipitapa, between the lakes of Managua and Nicaragua, to the city of Granada, on the western shore of the last-named lake.

A very interesting spot in Nicaragua, in every respect, and especially in that of archæology, is the island Umetepet, in lake Nicaragua.

In the fields near the principal village of the island Jaguisapa, also called Pueblo Grande, are four sculptured monoliths; none of them being a complete sculpture, but only a large fragment. Two of these represent the trunks of human bodies, of which the heads are wanting; the third is the head and bust of a human figure, the extremities and body of which are also wanting; and the fourth monolith is a woman on her knees, sitting on her heels, in the act of being delivered of a child, whose head had just appeared; the woman's head is missing. I was told that in other parts of the island sculptures are likewise to be found. Many small objects, of burnt clay and other materials, occur on the island, especially on the shore of the lake; being washed out from the steep bank by the action of the water. I have seen a kind of *casserole* of burnt clay, nicely painted red and black, with three hollow legs, with a rattle in each. In shape and decoration it very much resembled the one found in Santa Lucia Cosumalwhuapa, but it was smaller. There were also small figures, about two inches long, of burnt clay; these were likewise hollow, with rattles; besides other pottery curiously shaped, and stones for crushing the boiled maize. On the *hacienda* San Rogue are found beads of black and blue-colored stone, of various sizes, which had been used as ornaments.

Notwithstanding the greatest efforts, I could not get any information in regard to the language of the natives; they told me it was all forgotten.

The greater number of the male population of this village were boatmen, and practise the habits and vices of that class of men; others manufactured ropes, hammocks, and foot-mats; and the rest of the men were occupied in agriculture. The women carved and painted the small fruits of a kind of calabash tree, making therefrom *jicaros* and *whuacals* (Germ. spell.), to be used for chocolate and other liquids.

Travelling from Granada to the port San Juan del Sur, on the Pacific, I found in the woods, on the junction of the road to Nandaime with another path, a much mutilated and moss-covered monolith, representing a human figure. This was undoubtedly found in the vicinity, which might indicate the presence of others. From San Juan del Sur I returned by the road to Virgen, the port of the Transit Company on lake Nicaragua, to Granada; and thence, passing the cities Massaya and Managua, I proceeded to Leon. Here I collected as many words and sentences as I could of the *Raburochi* language, spoken in the neighboring village of Sutiaba; this idiom has the Spanish *ñ*, and the accumulation of consonants without intermediate vowels of the Slavonic languages.

After returning from an excursion to the volcano Momotombo, I started by the road of Chinandega to Corinto, to embark for San Salvador. In passing the hamlet Posolteguia two women, who were pointed out to me as understanding the language of the ancient inhabitants, refused to give me any information concerning it.

I have not met in Nicaragua with any aborigines in a primitive state. The people I found, not to speak of the descendants of Europeans, were of mixed races; or, if of a purer blood, already contaminated by European civilization, that is, European fashions and vices. They shared the same characteristic traits with the inhabitants of Honduras in a similar state of civilization. If there was any difference in the two, it would be only in the degree of the qualities, but not in their nature. I found the same scarcity of food for man and beast; with the sole difference that the price of a *medio almud* of maize, twelve to fifteen pounds, was not higher than forty cents. The cause for this might have been the smaller number of consumers of that grain, as with a large number of the inhabitants baked green plantains take the place of the *tortillas*. The price of the plantains was very high, only six to eight of the green fruit, and not more than four of those near to maturity, were bought for half a real, five cents. The currency of Nicaragua is that of the lighter value; one dollar is worth eighty cents, and a real ten cents. A bottle of lard was sold for forty cents, and an *arroba* of cheese, twenty-five pounds, for eleven dollars. The only article comparatively cheap was beef, which was five cents a pound. Fruit was scarce all over Nicaragua, with the exception of the two districts of Rivas and Chinandega, which are considered to be the garden spots of the State; the district of Rivas being especially known as such to foreigners, on account of the road of the Transit having passed through it. There existed a similar scarcity of food for animals, for travelling beasts as well as stock. They were mostly restricted to pasture, of which in the dry season there is very little. If, while travelling in Honduras, I was informed of so many hundred of cattle perishing every year for want of food, here I saw the plains of Segovia and Chontales strewn with the bones of cattle, horses, and mules, and the living creatures reduced to skin and bone. The death of the animals on the plain of Segovia might have been caused partly by perishing in the swamps, into which the plain is converted in the rainy season. In fact, I have been informed that such does take place, beasts of burden, and even travellers becoming mired in the swamps.

The indifference of the people about their animals is the more astonishing as it is not the consequence of any ill feeling towards them; on the contrary, they seem to be fond of them, and treat them on an equal footing with their own kind, and keep a superfluity of them. In Tipitapa, where with the greatest difficulty I could get a few green plantains for myself, and some maize for my horse, I had to stand by the horse while eating to drive away with a stick the emaciated and starving goats, swine, horses, cows, and asses, all belonging to the house in which I was located, while fowls, cats, and dogs always surrounded my person and impeded my moving about, expecting from me something to eat. The great scarcity of provisions can be imagined from the fact that the fowls in Puerta, a solitary dwelling some miles distant from any habitation, in which I passed a night, did not recognize maize as a food.

Another cause for the death of the animals is the scarcity of water. One can travel half a day, and more, without coming to water, and when found it is mostly in pools in the dry bed of a brook. In the hamlet of Santa Clara, where I rested in the middle of the day, arriving thirsty and asking for some water, that which

was handed me had the smell and taste of water in which cows had been standing; and on the *hacienda* San Jeronimo I had to pay half a real for a drink for my horse of water drawn from a well.

Before the establishment of the Transit through Nicaragua the daily wages of a laborer were one real. For half a real he could buy from forty to sixty plantains, or a fowl, and other things in proportion. With the establishment of the Transit the wages rose to double that amount, and were still so at my visit to the country; but one gets now only six or eight plantains for half a real; and a fowl costs two, and two and a half reals. This disproportionate rising of wages and of the price of food would show that the mere advance of wages does not alleviate the condition of the laboring class.

THIRD EXCURSION FROM SAN SALVADOR.

My third excursion from San Salvador was with the intention of going to Costa Rica, and of passing from there by land through the province of Chiriqui to Panama. In this way I intended to come in contact with several aboriginal tribes, which have still pretty much preserved their independence. For this purpose I went first to Panama to ascertain if I could start from there to reach Costa Rica, by land. But all the information I got was such as to force me to abandon that idea. I went therefore in a steamer to Puntarenas, the port of Costa Rica on the Pacific. From there I went first to San José, the capital of the Republic, to arrange the preliminaries for my excursions. The first of these was directed to the active volcano Rincon de la Vieja, near the frontier of Nicaragua, thus uniting my researches in this state with those made in Nicaragua. To avoid the necessity of re-passing the same road which I travelled when coming from Puntarenas, I went to Alejuela, the capital of the province of the same name, in the hope of reaching the volcano by crossing the mountains. No such roads existing, I had to proceed on that commonly used.

In Liberia, the capital of the province of Guanacaste, I was informed of the existence of many ancient graves in the Sardinal district. Near the *hacienda* Guachipilin, from which I ascended the volcano, I visited the ground on which are many tumuli, said to be the burial places of the ancient inhabitants. These tumuli are simply heaps of stones several feet in diameter, devoid of any uniformity of structure, very much like those which farmers in this country construct from the stones collected in the fields. The only peculiarity about them was that the base was formed of small stones, the size of the fist, on which rested the larger stones forming the top of the tumulus. Some of them have been searched, without finding anything except some pottery in fragments. Such fragments were found in a larger tumulus about six feet wide and eighteen feet long. In this and in some others I observed pieces of flag-stones two inches thick. About two hundred mounds exist on the place.

After my return from this excursion to San José, I started again to Cartago, the second city of importance in the state, with the intention of reaching the Atlantic

coast, and in travelling southward to visit the two aboriginal tribes of Terravá and Borucca. These two tribes are interesting on account of having preserved their independence and even resisted the priestly sway. They do not respect a priest unless clothed with the priestly gown, and expect him to wear it all the time. One of their curates sitting in the hammock, without his robe, was attacked by his parishioners, and had to use his gun to save himself from injury. On that account they are most of the time without a priest, as it is difficult to find one willing to go there, and if he does, he soon leaves. They are also hostile to all strangers and even peddlers. If one gets there, he is suffered to remain but a short time.

On market days Cartago is frequented by natives, whose heads, both of the males and females, are covered with our fashionable "plug hat," with the exception that its shape is that of the fashion in the beginning of this century, that is, broad on the top and narrow at the brim.

In my advance to the Atlantic, I passed the purely Indian village of Turialba, the inhabitants of which have entirely lost their native tongue. Near by were some remains of ancient edifices, but no sculptures, excepting an implement like those I have seen—a stone for crushing maize, standing on feet which were carved; and a stone two feet long and one foot wide with a mythical animal in low relief. I was informed that the year previous an "idol," five feet high was found. I was likewise informed that at a distance of six miles were other more extensive remains of ancient edifices and burial places of the ancients. In fact in every village I heard similar accounts, which would prove a dense population in previous ages.

The *cura* of Turialba had the kindness to allow me to accompany him on his official visit to the aboriginal village of Kukri (Tukurigue) to read mass there. He is obliged to celebrate it every other Sunday, for which he gets paid by the government. Costa Rica is the only state of Central America and in all America, and perhaps in the so-called civilized world, where the priests are paid by the government. The natives contribute only exceptionally. In Kukri the *cura* did not even receive his food from the community. While he was staying there a woman was appointed to prepare the food he had to bring with him. Now and then a woman would bring him an egg or some *yucca*. It is quite the reverse with the other states of Central America, and especially Guatemala, where the natives devote to the priest most of their earnings, and almost adore him.

The inhabitants of Kukri are the remains of a mighty tribe, which they call Sakawhuak (Germ. spell.), while the inhabitants of Orosi, another village belonging to the same tribe, name it Sechewhuak (Germ. spell.). Their principal food consists of *yucca*, yams, and sweet potatoes. They raise also plantains and bananas. *Tortillas* are scarcely ever eaten, most likely on account of the great trouble required to make them and that of planting maize, as the people seemed very indolent. They raise pigs, and kill once in a while one of their cattle. They smoke the meat to preserve it, while in other parts of Central America the usual custom is to desiccate it in the sun.

Their favorite occupation is strolling through the woods with bow and arrow, in the use of which they are experts, hunting game. The fish are usually caught

with spears in that section of the country. They are the only tribe which I found still using the arrow, while the usual weapon in other parts of Central America is the blowing tube, by means of which with balls of clay, sometimes hardened, birds and small animals are taken. Their dress is very primitive. Those who do not belong to the aristocracy, wear only a kind of apron round the loins made from the inner bark of trees. The aristocratic people replace the bark by a piece of cotton, and the males by short trowsers.

The construction of their dwellings is somewhat peculiar. While in other parts of Central America the houses and huts are of a quadrangular form, the dwellings in Kukri are constructed from a kind of reed about two inches thick, and are oval in shape and divided into two apartments of an unequal size. The larger one is the sitting and sleeping-room, along the sides of which are erected, from smaller reeds, the frames to sleep on; the smaller apartment is the kitchen, dining-room, and store-room. The dwellings look neat without and within.

Like all Indians of Central America, the inhabitants of Kukri are hospitable; they offer food to one soon after entering their dwelling.

Their language, which they call Sakachi, differs from others by the frequent use of *r* and *k*, and some guttural sounds. To take notes of this language was the principal object of my visit to the village. Unluckily I could not study it as much as I liked, as the *cura* would not remain longer than a day, and for fear that my horse, which was turned out in the woods with his, might get lost in his absence, I had to depart likewise. I went to the village of Orosi, there to extend my investigations in the language; passing through the village Paraiso, in the vicinity of which, and further on in Ojaraz, were architectural remains of the ancient inhabitants.

Orosi was, under the Spanish government, a flourishing town, capital and head of the Dominican missions in the province of Salamanca. About two-thirds of the old convent was still existing in a dilapidated condition, not being used for any purpose, as the priest officiating in Orosi resides in Paraiso. The population of the village is diminishing on account of the aborigines having sold their land property to the mixed Ladinos, who are setting out coffee plantations, and thus driving away the offspring of the former race. They are losing the pride of ancestry and even denying their knowledge of their language, thinking the Indians to be of an inferior race, and that it is a disgrace to be known as one of them. The swampy condition of the soil on which the village is built might also have aided in the diminution of the population.

On account of the limited means at my disposal I was obliged to give up the visit to the tribes of Terravá and Borruca. I resolved to penetrate at least in that direction to the nearest settlement. In passing the Indian village Tobosi my hopes for extending my linguistic researches were not realized, none of the inhabitants knowing the idiom of their ancestors. Advancing further I found in the small village Corallio some remains of ancient edifices, and visited likewise an ancient grave that was opened but recently, and its contents still visible; but besides three molar teeth I did not find anything; there I was told that it was opened a year ago and contained bones and pottery.

Still further on I came to the district of Dota, in which the dwellings are scattered. I visited one locality, in which were some ruined walls of ancient buildings. The standing, outside walls of a circular edifice, seventy-eight feet in diameter, were two feet and a half above the ground; the interior space was filled with earth. All around this circular ruin were visible the remains of edifices of an oblong, quadrangular shape. I was shown a kind of handcuff, or napkin-ring, of a porphyritic stone, the inside of which was smooth, and had two rows of four-sided carvings on the outside.

The farthest place that I reached was the new settlement of Santa Maria, still in the district of Dota. There were also indications of ancient edifices. This concluded my ethnological researches in Costa Rica.

The modification of a people by circumstances is exhibited in Costa Rica by the influence of the coffee plantations. Before the commencement of this industry the inhabitants were plain-minded people, reputed for their hospitality and generous feelings. They possessed abundance of food, as far as it is possible among improvident people. The prices of food, at least, were low; that of an *almud*, in Costa Rica known as *cajuela*, of maize, the staple food of the people, varying from one *real* to one and a half. The value of a *real* is twelve and a half cents. As soon as the planting of coffee commenced as an object of industry, which took so many hands away from other agricultural pursuits, the immediate consequence was a rising in the price of food, which must have become scarce. At the height of the mania for getting rich quickly by planting coffee, the price of a *cajuela* of maize reached to three and four dollars. A cajuela of maize is about thirty-six pounds, which at the time of my visit was sold for one dollar, and the other articles of food at corresponding prices. The price of a pound of meat was one *real*, of that of butter four *reals*, of a bottle of milk one *real*, and so on. All these prices quoted were paid in San José, the principal seat of the coffee industry, of commerce, and of the government of the country. The rent of houses there reaches as high as twenty gold ounces a month; I was asked for a single room with a kitchen, one ounce and a half a month. The gold ounce has a premium of one dollar, and consequently its value is seventeen dollars.

The population of Costa Rica is estimated at 800,000 to 1,000,000 inhabitants; of these many thousands are engaged in the culture of coffee. I was informed that three thousand ox-carts are occupied in the transportation of this product to the port. The wages of a laborer are from four *reals* to eight a day. These and the high price of food would seem to many persons favorable circumstances, and as indications of the low value of money; however, this is not the case, but the opposite. Money loaned on mortgage realizes from 12 to 25 per cent. a year. This high interest has ruined already many persons who wished to get rich on borrowed money.

Besides the high price of food and other necessaries, the coffee industry in Costa Rica has changed the inhabitants from a simple-hearted people to one greedy after money, exorbitant in their demands, and estranged to hospitality and generous feelings. As a proof of this may be mentioned the single case, that on the road from the port to San José the charge for a single cup of coffee is two reals, while

the value of a pound of coffee is only one-half that amount. Although the character of the greatest portion of the inhabitants has been changed, fortunately some few have still preserved their simplicity and kindness. The greatest change of character took place in that region where the mania of planting coffee most predominates. It is calculated that on a *manyana*, one hundred and fifty feet square of land, the coffee-trees planted will produce three hundred and seventy-five dollars a year, while sugar-cane planted on an equal area will bring a thousand dollars, and cacao trees the enormous amount of two thousand and five hundred dollars a year. Nevertheless the culture of cacao is entirely neglected, and the sugar-cane is attracting only moderate attention.

With the exception of Nicaragua the culture of cacao is neglected all over Central America. The people content themselves with the imported bean, while the native product is superior; or if the foreign is equally good, as, for example, that grown in Tabasco, they have to pay for it as much as half a dollar a pound, and then it is scarce in the market. One of the few men whom I met with, who perceived the importance of the culture of cacao to those countries, was the governor of the department of Sensunat, in San Salvador. He planted some trees himself, and passed an ordinance compelling every pater-familias in his department to plant at least five cacao trees.

Instances of kind-heartedness I experienced in places remote from the prevailing desire after gain. Lorenza Ximenes, the woman in whose house in Los Frailes I took refuge from a shower, brought me, immediately after entering, a *whuacal* with corn-starch boiled in milk. In Corallio, in the house where I went to buy some maize for my horse, I was served with chocolate and *biscochos*, sweet rice-cakes, hot from the oven; and was asked but half the usual price for the maize. The next morning, when I went to bid the kind people good-bye, the man came out with a cigar and a glass of brandy. Excusing myself for not accepting these articles, he went in and came back with some *markisottes*, sweet maize-cakes, which I had to accept. In Santa Maria, a new settlement with many discontented people, I was refused quarters in two houses, and in the third received permission to take my night's lodging on the maize in ears in the small barn. The next morning when I was starting, one of the men who refused to admit me in his house the night before came to invite me to drink some milk, undoubtedly repenting his unkindness. In Guacas I received the most sympathetic attention from the man and his wife from whose house I started in the morning, after having slept there the night before, to ascend the volcano of Irazu, and returning in the evening half-sick from being poisoned by some kind of whortleberries.

Indolence, the characteristic trait of all inhabitants of a tropical clime, is likewise to be seen in Costa Rica. Bagazes was the only place where I found dried plantains, which are most delicious; although the demand for them is extensive, and they bring a high price, there is no person who will produce enough of them to supply the local demand. The drying of the fruit does not require any outlay of money, nor any other trouble than to expose the perfectly mature fruit to the sun.

EXPLORATIONS IN SAN SALVADOR.

A fine field for ethnological and archæological research is presented in the Republic of San Salvador, to explore which I directed my steps first to the western part of the State, consisting of the departments of La Libertad, Sensunat, Santa Ana, and the Balsam coast, where the renowned "Peruvian Balsam" is produced.

The inhabitants of that section are the descendants of at least three different tribes. A few centuries before the discovery of America, the country, then inhabited by a nation now unknown, was invaded by Mexicans, who remained there; and at the conquest of that country by the Spaniards, some Mexican tribes who accompanied Alvarado settled there likewise. The language spoken is the *Nawhuata*, as some pronounce it, or *Nawhuatl* and *Nawhuat* according to others; but in some villages different terms are used to signify the same thing, which may be the residua of the language of the invading or of the invaded nation.

It would be a difficult task to separate the descendants of the various nations by their external physical characteristics. I found the women there, as all over Central America, with very few exceptions, devoid of personal attractions, while the men possessed more intelligence and beauty.

The dress of the men consists of a pair of wide trowsers of unbleached cotton, called *salla*, while the upper part of the body is covered by a short shirt, or a jacket of the same material. There is no term in the *Nawhuata* language for shirt or jacket; therefore these both must be of modern introduction. The women wear a piece of blue striped cotton around the body, wide enough to extend to the ankles, which is secured by tucking in the overlapping end. The name of this apron is *Iwhuei.* The upper part of the body is mostly nude; at times they cover it with a piece of cotton, like a kerchief, the loose ends hanging down over the breast. I have seen this done at times on account of my coming near them.

I went first to that section of the country near the Pacific, which is known to geographers as the Balsam coast. I found its inhabitants, like those of all Central America, fond of music. I did not see, however, any instruments of European pattern. I observed in the village Whuisnagua (Germ. spell.), (Four-thorns,—from *whuis* "thorn," and *nagua* "four"), for the first time, their national instrument called *carimba.* It consists of a reed five feet long and about an inch or an inch and a half thick. A brass wire is attached to the two ends, by which the reed is slightly bent. At a third of its length the wire is tied by a string to the reed, and at the same place is fastened to the opposite face of the reed an inverted *jicarro*, an oblong cup made of the small kind of calabash fruit, with its opening downward. With a splint of a similar reed a foot long, the two parts of the wire are touched, giving only two distinct sounds, which are varied by changing the time and rhythm. At the same time the opening of the *jicarro* is more or less closed by the palm of the left hand, which produces the melody desired.

As a general rule the inhabitants of San Salvador patronize their schools better than those of Guatemala. Although every village on the Balsam coast possessed a school-house: only two, Komasawhua (Germ. spell.) and Teotepegue, of the six

villages visited, had teachers. In the school of the first-named village were ten pupils, and over twenty in the latter. In none of the villages was there a resident priest, or any at all excepting when they came to celebrate the festival of the patron saint.

Three varieties of maize are planted in that section; *Matambre* (hunger killer) is a yellow variety; *Borozo* is white; and *Liberal* of a black color. This last-named variety ripens within forty days, and the two others in four months time after planting. *Matambre* received its name from producing a sure and prolific crop.

From the Balsam coast I proceeded to the city of Sensunat, the capital of the department of the same name. Besides other scientific researches I tried to collect as much as possible of the *Nawhuata* language. In all I was aided by Don Antonio Ipiña, the governor, who, receiving me hospitably in his house, ordered men from the different villages to come and give all the information they could. He conducted me also to the two mounds which are in the outskirts of the city. In their vicinity I found in a ditch two sculptured heads of colossal size, much mutilated, which undoubtedly were parts of missing statues. I was informed that figures of burnt clay, and sculptured stones of various kinds, are often found in the city, especially when digging the foundation of a house. But all these articles, being of no interest to the inhabitants, are not preserved.

The governor also permitted me to accompany him in his visit of inspection to the various communities in his department. On this tour we visited the elevated plain encompassed by the mountain of Tischapan (Germ. spell.) and the volcanoes Cuyutepet and Sisilintepet. On this plain are three sculptured monoliths. Two of them represent gigantic human heads, one of which was broken in two. All of them are more or less buried in the ground, the third so much as to obscure the design upon it.

The frequent occurrence of ancient pottery and small figures ("Idols") of burnt clay in the village of Apaneca induced the governor, on our visit there, to order an excavation in the square of the village. In doing it an ancient grave was luckily opened. It was formed by four porphyritic slabs more than three feet long and two feet wide, standing upright in a kind of semicircle, and another slab lying horizontally at the bottom of the grave. After the removal of the earth to a depth of about three feet, the interred body was reached. All the bones, although preserving their shape, were so brittle as to crumble at the least touch. By removing the earth with my hands with the greatest care, the clavicles as well as the bones of the arms and thighs, especially the heads of the latter, could be seen. They showed that the body was buried in a crouching position. In consequence of their brittleness none of the bones could be preserved except some crowns of the teeth, which were still compact, perfectly white, and not worn. In immediate proximity to the bones were traces of a dark-brownish substance; remains of the decayed flesh and clothing. Near the neck were more than two handfuls of pointed teeth; below these were variously carved pieces of jadeite of different sizes. The largest of them was a square piece two inches long, an inch and a quarter wide, and a third of an inch thick. On the darker-colored front was carved an image kneeling and sitting on the heels. On a smaller piece

was carved a human head; still smaller pieces represented hands and feet, some kind of implements and beads. All of them were pierced so as to allow a thread to pass through. A little to one side of the legs of the corpse were found the bones of another skull. This occurred during my short absence for making meteorological observations; and I am unable to say if the other bones belonging to this body were also found, but I have no doubt they were, and consequently two persons facing each other were buried in the same grave. Near the legs of the first-named person was lying horizontally an implement of a gray porphyritic stone highly polished, in the shape of a horseshoe. It was sixteen inches long and fourteen inches across at the base of the two legs. In cross section it was a truncated triangle two inches wide on the top and three inches at its base. A few inches distant from the ends of the implement was a head sculptured in profile on a slab of similar stone. On both sides the eyes, ears, and lips were sculptured. The eyes were very large, three inches and a half in diameter, while the entire width of the head above the eyes measured eight inches, and its length eleven inches. The base of the head was flat, extending from the chin to the occiput. The lips, eyes, and ears were colored with red ochre, and the cheek with some black paint. Small quantities of both these pigments were lying close by. On a line with the former implement and head another similar implement and head were found, resembling the first, except that they were made from dolomite instead of porphyritic stone. These latter two were very much corroded, so much so that the different parts of the face with the exception of the ear on one side could no longer be distinguished, while the former were uninjured, except that their polish was obliterated. This indicated the high antiquity of the grave. Next to the second implement were two immense pipes of burnt clay, painted with red and white figures. The colors were partly gone, and the remainder peeled off at a touch. In their shape they resembled a straight round cup, four inches high and the same in diameter, having near the bottom a short neck for inserting the tube. They were apparently designed for no common use. Outward from the pipes was a heap of pottery fragments. It was impossible to decide whether the utensils which were composed of these fragments were buried whole, or broken; in one instance it was certain that only pieces of a utensil were buried, as the other portions necessary for its construction were missing. Among this heap were the fragments of an image of an old man, the head of which was perfect. One of the utensils found was a kind of basin with two handles. One of these handles represented the head of a rabbit, and the other, its four feet tied together. Besides this heap of pottery there were others; the hollow above one of them indicated that the vessel has been buried in a perfect condition, and the vacancy was caused by the collapse of the broken parts, and, possibly, partly by the decay of the food which this vessel contained when buried. There were also three obsidian knife-blades, and near them indications of decayed substances. Some of the vessels had three legs, which were hollow, with a rattle the size of a pea inside. The presence of the two pipes in the grave is the more remarkable as the ancient inhabitants of Central America did not smoke tobacco; those who smoke now seem to have acquired the habit from Europeans.

Only two museums possess, to my knowledge, implements similar to those described as shaped like a horsesnoe. A more ornamented one is in the Christie collection in London, which was found in Mexico; and a plain specimen of a porphyritic material which came from Nicaragua is in the National Museum at Washington. It is believed that these implements were put on the necks of victims to be immolated. I cannot coincide with this opinion, for various reasons. Firstly, the shape of the implement is not appropriate for such use, while the horsecollar-shaped implements are vastly better adapted to it. The second reason is their scarcity; for, if they were used for such purposes they should be more abundant, as is the case with the "collars." The fact of their being found in the grave at Apanaca confirms my opinion; for, if its real use had been that which is supposed, there would be no explanation for their presence in the grave.

In Whuaimango (Germ. spell.), a village visited on this excursion, I had occasion to hear one of the few national songs. The object of it was very plain, and would not be considered by us poetical. It was a dialogue between the kitchen-maid (*molendera*), whose chief office consists in preparing and baking the tortillas, and the farmer's boy (*corraléro*). She admonishes him to bring dry, and not green, wood, thus to ease her arduous work of making the tortillas; to her appeal the *corraléro* replies. This recitative was accompanied with a national instrument, the *marimba*, which consists of splints of wood, to the under surface of which are fastened short wooden tubes, which are tuned by affixing the necessary quantity of wax to the ends. The sounds produced are very sweet and rather doleful.

Massawhuat, another of the villages visited, gave mournful testimony of the decrease in the number of inhabitants in that once populous country. I was informed that this small village was once a flourishing town having as many as sixteen churches. At the time of my visit a miserable structure of reeds was used for worship, the only existing remains of a church being so dilapidated as to be unfit for use.

Additional evidence of the diminution of population was furnished by the little village of Calulo, visited on my tour of inspection to the eastern section of the department; the ruins of a large church, and the extensive plantations of fruit-trees from which more than 2000 dollars a year are realized, bear witness to the once flourishing condition of that place.

The next place visited on this tour was Ähzalku, once the residence of a powerful Cazique, with 80,000 inhabitants. The number at present is said to amount to 7000, and the place is divided into two sections, of which the more elevated constitutes the town, and the lower, a village. Each has a separate municipal authority. The inhabitants of Ähzalku still preserved the aboriginal dance, *tepunawhuas* (Germ. spell.), which they perform on festival occasions at the sound of a rattle, *ayakatsch* (Germ. spell.), made by the seeds of a tree, *ischkukuyutzin* (Germ. spell.) in a hollow *jicarro*. The greater part of the song which used to be sung at this dance has been lost. That which is at present sung is the following: "Asi yo ya fue ya; nigan munemiltia ischpan schutschinanzi" (Germ. spell.). It can be seen that the first part of it is Spanish, and the translation of the part in *Nahuata* is: "There is that flower ahead." If this dance is

performed on the festival day of a saint, the wording of the song has reference to that saint, and is in the Spanish language, interspersed here and there with a word from the *Nawhuata.* From this circumstance it would appear that this dance formed a part of the religious ceremonies of the ancient population.

With the visit to the eastern section I concluded my researches in the Department of Sensunat, and went next to the department of Santa Ana. In the city of Santa Ana, the capital of the department, as well as in every place visited in it, I was informed of vestiges of ancient habitation mostly in the shape of pottery and small figures of burnt clay. These figures are called *muñecas*, "dolls". One of these I received as a present in Santa Ana, and in Atiguisaya a fine vase. The donor of this latter was a blacksmith, who had in his dwelling the engraved portrait of Volney, and was familiar with the "Ruins" by that author, and likewise with the works of some Spanish authors. Surely this would be an extraordinary circumstance with a blacksmith in any part of the globe!

This vase is pear-shaped, six and three-quarter inches high, and has a diameter of three and three-quarter inches at the top, four inches and a half at the base, and five and a half in its greatest width. It is of burnt clay of a red color, with the appearance of having been glazed. At about the middle of the convex surface, on opposite sides of the vase, are oblong rectangular panels each three inches high, and separated at their approaching ends by a space an inch and a half wide. Within each of these horizontal panels are represented two squatting figures apparently engaged in lively conversation. The relief of the figures is only that of the general surface of the vase. The gorgeous head-dress of one figure is of a gigantic bird of prey with extended wings; and the head of the other is ornamented with two heads of animals, one placed above another. The fact that they are conversing is indicated by a staff originating from the mouth of one, and which bends downward and separates into two ends similar to the tongue of a serpent; and from the mouth of the other figure projects a short object, perhaps his tongue. One hand of each figure is pointed toward the other figure, the other hand being pressed to the heart with the elbow directed backwards. Between these figures are eight small tablets; four above, and four below the outstretched hands, which undoubtedly contain hieroglyphics. The upper two of the lower tablets represent the heads of birds of prey similar to that forming the head-dress of one of the figures. Behind each figure are some arabesques, as if representing some kind of plant. The two tablets are united by a continuous narrow rim on the top of them.

Similar relics are found in the town of Aguachapan, but I was not able to get any of them. Aguachapan is the corrupted Whuei-isch-apan (Germ. spell.), great eye (source) of water.

On the estates Labor, San Lazaro, and Llano Maria (the first visited on account of the Auzoles there), I had occasion to observe the social condition of the agricultural laborers (*peons*), in that section of the country. The holder of such an estate is proprietor of the soil, and a man who desires to settle on it has to pay one dollar monthly for the ground on which he builds his house, and a similar amount for his yard. He is permitted to cut all the wood which he needs

for constructing his dwelling, but in case of his leaving, he must allow his house to remain without any compensation. This agreement is made for one year, and has to be renewed every year. The land which the *peon* desires to cultivate is also leased but for one year. Exceptionally he gets it for two or three successive years. The rent for the land he pays in produce, which amounts to about one-sixth of the crop. Besides paying the rent the settler is obliged to perform all the work which the landlord requires; for this he gets six reals a week. This amount seemed to me less than a laborer gets in the villages; and although the rent for a lot in a village is only one-sixth of that paid on a *hacienda*, the men prefer to settle on a *hacienda* on account of the greater fertility of the soil.

The owners of plantations who do not possess extensive lands, secure their help by advancing the wages of a month or a quarter of a year to the laborer. This money is spent a long time before the expiration of the term, and the laborer asks and receives other advances, in which manner it happens that he not only never gets free of debt, but keeps increasing it as long as he gets credit; which he always can have if he is tolerably industrious. The farmers lose, at times, money paid in that way, although the laborer can be forced by law to pay his debts thus contracted in work. Such losses are counted as expenses of working the plantation, and mostly considered as having been paid by the gains received from the work of the laborer. The advanced wages are mostly spent in drinking and for the benefit of the church. All the laborers belong to various brotherhoods (*cofradia*), organized in honor of various saints. Their sole object is the celebration of the feast of the respective saint. For this purpose a member of the brotherhood is selected as *mayordomo* for that occasion, who, as such, has to defray all the expenses of the festivity, which consist in paying for the mass read and other priestly ceremonies performed, and for the drink consumed during this festival. I know of an instance of a laborer in Santa Lucia Cosumalwhuapa spending the whole advance of wages for a quarter of a year, except two dollars, immediately, as a *mayordomo* of a *cofradia's* feast. In San Salvador the man whom I hired as a servant and to whom I advanced one month's wages, spent the whole in three days' drinking in honor of his village patron, before entering his service. I was informed that the farmers were compelled to make such advances, being unable to get laborers under other conditions.

Drinking is the most prevalent vice all over tropical America which I visited. It is, however, less dominant in purely agricultural communities than in those which make their living principally by industrial pursuits, like the manufacture of hats, etc. In San Pedro Pustala for example, the inhabitants of which are almost exclusively engaged in the manufacture of hats, I found almost every house to be a *chichera*.

In the mineral district of the department of Santa Ana, which I visited, were likewise found indications of an ancient population; as in the hamlet San Juan and the village Metapan. It is not quite a century that this village has occupied its present site; formerly it was nearer the shore of the small lake of the same name. In this village, as in most other places, many incredible stories were narrated to me. One of these is to the effect that a large city is at the bottom of the

neighboring lake of Guija, from which but a few years ago some candlesticks of silver were fished up.

In Metapan I met with an Indian said to be over a hundred years old, who came on foot from his home, over ten miles distant, to celebrate the Christmas holidays. Except his failing sight he had nothing to complain of, and felt quite hearty for his age. His hair was quite black. In all my travels I never encountered a gray-haired Indian.

From Metapan I passed through the department of Chalatenango to the northern part of that of San Salvador and entered the capital. On the whole of this route I heard of vestiges of the ancient population. In the village of Chicohueso I received a small bust of burnt clay which was of such exquisite workmanship that most persons would scarcely believe that it had been made by the aborigines, and would have considered it as the handiwork of a European, if it were not that the present descendants of Europeans in this region are not able to produce such work. The present native population, however, are still expert in dyeing vegetable fibres, or reeds for the manufacture of hammocks, baskets, nettings, etc., and in manufacturing articles of clay, and also in decorating calabashes with drawings; but their artistic skill is far inferior to that of their ancestors.

Arriving in the village of Whuazapa, I was told that I had passed that very noon a place called Siwhuatan, on the river Lempa, remarkable for the many ruins of foundation walls regularly laid out. The *alcalde* told me also of the existence of ruins on his farm, where many human bones are found, which would indicate an ancient burying-ground. Some miles distant from the village were also the ruins indicating the streets of the former capital of the country.

The remaining department of the State of San Salvador, La Paz, which I visited next, furnished similar evidences of ancient habitation. In respect of archæology it is not less interesting than the others; my linguistic researches, however, were a decided failure, the present inhabitants having nearly forgotten the language of their ancestors. In every place visited I heard of the finding of pottery, figures of clay, and sometimes sculptured stones, whenever any digging in the ground is done; but I have seen scarcely any of these objects, as they were not preserved, and mostly given to the children to play with, and then, of course, soon destroyed. Nay, they are not even noticed or recognized as the work of the ancients. In the yard of a house in San Juan Nonualco I found a low relief of a grotesque animal, the owner being ignorant of its existence. In the same village I first heard of the extensive ruins in the Llano de la Palma, about a mile distant from the village Santiago Nanualco, which I afterwards visited.

In that plain are the remains of foundation-walls reduced to the level of the soil. They are constructed of small round stones laid together without any uniting material. All the walls form squares twelve feet wide and from twenty to twenty-four feet long. Some other walls were six feet and more above the ground constructed in the shape of steps. They also surrounded a quadranglar space, of which the width was less than the length. They were similarly constructed of stones without any mortar or cement. It is said that these ruins, and others still more conspicuous, cover an area of from six to nine miles long, bounded by two

streams east and west, while a third stream runs through the centre. But these statements are exaggerated, as proved by the topographical survey of my itinerary. This survey proves that the extent of the city could have been only one-half the size attributed to it. The same can be proved by the course of the two brooks forming the boundaries of the place, which were noted on my map. *Rio*, river, in those countries, is applied to every brook and running stream. Occasionally on that plain sculptured figures of stone of smaller size are found. The whole place was covered with bushes, which prevented a general view of the ruins, and permitted only the sight of very small areas at once. The ticks, *garapitos*, which infested the plain in incalculable numbers, are a great drawback to exploration.

I next passed Panchimalco, a purely Indian village, the inhabitants of which spoke the *Nawhuatl*, but very much corrupted. Having found an interpreter, I commenced, as usual, by asking for terms which were already familiar to me. My custom was, after acquiring a set of terms in a language, to see whether these terms were used in other localities, or whether there was any deviation from them. I also tested the knowledge and integrity of the interrogated person by ascertaining whether he possessed the idiom in question, and whether his answers were correctly and honestly given. In this instance I found out at once that my man was deceiving me by giving erroneous answers.

In Panchimalco are likewise remains of ancient habitations, many relics having been found on the hill near the village.

I shall mention now a spectacle which I had occasion to observe many times; I mean the funeral of a child. All over Central America the death of a child is not mourned as an affliction, but on the contrary is a cause for rejoicing, which is expressed in the manner of conducting the funeral. The corpse is carried on an open bier, clothed in the best garments, and adorned with flowers. In front of the bier marches a band playing waltzes, polkas, and other dances, accompanied by some young men and boys discharging rockets all the way to the cemetery. The motive of this proceeding is the belief that the child has become an angel, and as such enjoys a better fate than would have befallen it here on earth. However, some may think that the rejoicing of the parents was occasioned by relief from a burden, for which they would have been obliged to provide in the future.

I may say a few words on the *Nawhuatl* language, of which I collected vocabularies from the inhabitants of twelve different places, during the space of several months. First of all, this language is devoid of the sounds represented by the letters *d*, *f*, *q*, and *r*; and amongst all the words in my vocabularies there are but three commencing with the letter *l*. This circumstance might indicate that these words do not belong to the pure *Nawhuatl*. As the mode of thinking of the people who used and now use this language vastly differed from our own, their conceptions of things, and consequently the terms for them, were different from ours. This is principally the case with those ideas which we call abstract. For example, there is no term to express *good* and *handsome*; or *bad* and *ugly*; *yek*, which at present is used to express *good*, means in reality *serviceable*, and for the word *bad* and *ugly*, *inte yek*, *not serviceable*, is used. They have no term for *tree* or *bird*, but the species which is meant has to be designated by its proper name.

Although there is an expression for *right*, there is none to designate *left*. The conception of what we call morality was a different one with the people speaking the *Nawhuatl* from ours. For that language does not possess a term for *truth*, nor for *lie;* and none for *stealing*. This would indicate that those people either did not practise the vices of lying and stealing, or that they did not look upon such actions as vices. It cannot be, however, denied that they possess generalized ideas. This is proved by the term *Tunal*, which seemed to indicate the *universal vital power;* for they designate by it *sun*, *light*, *day*, and the *spirit* or *soul*. Similarly the *Nawhuatl* language indicates the simplicity of manners of its originators. *At*, water, forms the radical of the expression for *drinking;* which shows that drinking and water were identical and inseparable.

A most interesting circumstance consists in the want of separate expressions for *blue* and *green*. The term *schuschuik* (Germ. spell.) is used for both these colors. L. Geiger[1] attempts to prove that the same is true with two of the great divisions of the human family, the Semitic and Indo-Germanic. In the books of Moses, and in the whole Bible, the word *blue* is never expressed, nor the *blue* of the atmosphere ever mentioned, although the sky is very frequently described. The same is the case with the Indo-Germanic branch. No reference is ever made to the blue of the atmosphere in the *Rigveda* and *Avesta;* and that phenomenon seems to have been likewise unknown to the early Greeks, as it is never mentioned by Homer. Nay, more, even the *Koran* never mentions it, nor do its interpreters down to the eighth century of our era. The case of the Chinese is similar, with whom the same hieroglyphic (Nr. 174) *thsing* stands for *blue* and *green*.[2]

The highest number reached in counting in the *Nawhuatl* language is twenty, *phŭal*, which signifies a count, *contado*, and is represented by twenty kernels of maize. The only higher numbers are the multiples of twenty; and four hundred, that is, eighty hands, is expressed by *se sunti*, which seems to have signified a certain company of men.

EXPLORATIONS ON THE WEST COAST OF SOUTH AMERICA.

Leaving Central America, I went to the Pacific coast of South America, visiting Ecuador, a part of Cauca, a state of the Columbian confederation, and Peru, and found them rich in archæological remains of various kinds.

The inhabitants of these countries differ in many respects from those of Central America. The principal cause of these diversities is probably the difference of physical characteristics exhibited by those two parts of America. The surface of Central America is more uniformly elevated above the sea, and consequently its climate is more equable. Those regions which are sufficiently elevated to influence the climate to any extent are of small area. South America, on the other hand,

---

[1] Ursprung und Entwickelung der menschlichen Sprache und Vernunft. Stuttgart, 1872, vol. ii, pag. 304 and foll.

[2] Ibid, pag. 336 and 376.

embraces regions of low bottom land, inundated every year by the overflowing of large rivers; or sandy deserts, lifted above the sea in recent geological epochs; and all gradations of height reaching above the line of perpetual snow. This diversity of location and climate must naturally have had its influence upon the habitations, food, etc. of the inhabitants.

In Central America the dwellings are on a level with the ground, and made of reeds, bamboo, split trunks of trees, or dried mud. Similar materials are used in South America, but the construction of the dwelling varies considerably. On the seacoast of Ecuador as far inland as the inundations of the rivers extend, and even in localities which are not thus exposed, the dwellings are erected on posts, generally nine in number, and about seven feet above the ground. Steps lead to the floor above, which, as well as the sides of the building, is constructed of thick bamboo stocks opened and incised so as to spread out like a board. The rafters are likewise of split bamboo, and are covered with palm-leaves to form the roof. In most cases one such structure answers all purposes; exceptionally, some feet distant from it a similar one of smaller dimensions serves as a kitchen. In such cases the two are united by a bridge. The empty space below, between the posts, is used for storing the canoe or some wood.

On the river Guayaquil I found some floating houses erected on *balsas*, rafts of a very light wood, which were large enough to accommodate, besides the house, a pigsty, and even furnished room for a small garden and some fowls. In the elevated regions of the country the dwellings resemble in material and form those of Central America, varying with the location, until on the high plateaus of the Andes which are mostly used for pasture, the dwellings dwindle down to a simple roof of straw or dried grass resting on the ground, in which a low opening serves as an entrance.

When dried mud is used for the construction of a building or the wall of an enclosure, it is not made into bricks, but the clay or mud, sufficiently moistened, is trodden in a box made of thick boards, about three feet wide, four feet long, and a foot and a half or more deep, open at the top and bottom, until the box is full. The clay is left until the next day, when it is sufficiently solid to remove the box, which is so constructed as to be taken apart and put together again. In this manner a part of the wall is finished every day. The work goes on more speedily when several boxes can be used at once.

All the dwellings are constructed without chimneys, excepting in the villages of Tusa and Puntal, openings in the side of the roof serving to let out the smoke.

The inhabitants of South America differ from those of Central America also in their food. In the latter countries *tortillas* and beans constitute the principal food; only in a few sections are these replaced by baked green plantains, as in parts of Nicaragua; or, by tuberous roots, as the yucca, sweet potato, etc., which is the case with the Peschchas (Germ. spell.). When potatoes are planted there it is done as an object of industry, but not to form the exclusive nourishment of the planter. It is otherwise in South America, where there is a greater variety of food. Near the seacoast rice and leguminous seeds, as beans, peas, and lentils, form the principal diet, not only of the poorer classes, but also of the rich. Every meal of

the latter is concluded with *menestras*, rice and beans or lentils. The common bean is replaced in some regions by the seed of other leguminous plants, as the *Frijol del pálo*, the seed of a shrub about four feet high, which yields but three or four crops. It is of smaller size, with a thinner skin than the common bean, and of a good taste. Another substitute for the bean is called *Vocon* or *Sarandaja;* likewise the seed of a shrub, the leaves of which resemble those of the bean.

In more elevated regions the rice and beans are replaced by maize; which, however, is never used in the shape of bread, but only boiled, as *mate*, or toasted under the name of *cancha*. Both these preparations are eaten cold, a handful or two composing the entire meal of the laboring class. *Morocho* is a variety of white maize broken and boiled. It is quite palatable if eaten with milk. *Chochoca* is another dish prepared from maize, which is taken before it is ripe and kept in water for two days, by which treatment it is fermented a little to give it an acidulous taste. After that it becomes very hard by drying, and when broken is preserved, to be boiled in water. A variety of yellow maize, called *Paccho*, puffs up when toasted, and is so eaten. *Nuña*, a small bean of various colors, acts the same way and tastes similarly.

In still more elevated regions potatoes and barley, which often are the only crop that can be raised, form the only nutriment of the inhabitants. The potatoes are eaten by the poorer classes boiled in their skins without any seasoning whatever, not even salt. By the other classes they are prepared in other ways; the most common dish, and that which forms the beginning and end of every meal, even of the richest, is called *Logro*. This consists of pieces of peeled potatoes boiled in water, to which is added according to the abilities of the consumer some cheese, either alone or with a small quantity of grease and meat. Less wealthy people content themselves by making a soup of peeled potatoes; when this soup is of a thick consistency it is called *Chupe*. *Cocopa* is a kind of soup prepared of dried potatoes. The peeled potatoes are first boiled, then sliced and dried to be preserved for use.

I must remark that the potatoes are never cultivated; that is, the soil in which they are planted is never manured. In consequence of this they are of small size, and of an unpleasant, acrid taste. But they are also free from disease. In Chota, where I found good flavored, large potatoes, which were grown in manured soil, I heard the cultivator complain of their rotting. There is one thing about the potatoes which I could not understand, namely: they are consumed in preference to wheat, although generally not very delicate in taste, and very high in price. In Quito a hundred pounds of potatoes cost one dollar and sixty cents; exactly the price of the same quantity of wheat.

Next to the potato, barley forms the principal article of food in very elevated regions, and is the only grain which will succeed in such localities. It is used in two forms, in a dry, and in a humid state. When the barley is first toasted and then ground to flour, it is eaten dry by the laboring class. The laborer takes a little bag of it with him when he goes to work away from home. This meal is very palatable, and, mixed with hot water and sweetened, makes a very pleasant drink, which is used by the wealthier classes. The barley is also used as *arroz de cebada*. The cracked barley is boiled in water to the consistency of mush, and

so consumed without salt or other condiment; except, perhaps, the leaves of a wild turnip. This latter preparation was my sole nourishment for two days in the *hacienda* Tablon Chico.

Chocho is a kind of lupine extensively used as a substitute for maize. After being soaked for one or two days in water, to free it from the acrid substance it contains, it is boiled in water and consumed like *mate*.

The Windsor bean (*Faba vulgaris*) is also a substitute for maize in some localities. It is boiled, like *mate*, or eaten baked before it is fully ripe, in which state it is very palatable.

Wheat forms also an important article of food. It is consumed in the shape of bread by the descendants of Europeans in the towns and cities. The bread is generally of a very inferior quality for various reasons. The grain itself is mostly very poor, and it is not ground fine enough. The dough is very imperfectly kneaded, and the bread only half baked. Wheat is also made into mush, for preparing which the grain is first boiled in lye, then freed from the hull by rubbing it with the hands, and washed and dried for future use.

Articles less extensively used as food are: *Chenopodium*, *Quinuacoyo*, a yellow seed of the size of the poppy seed, which swells up when toasted, and is used for preparing soups; and the meal of peas, which is very palatable. In warmer regions, where plantains grow, they are used when green, either baked, as in Central America, or cut in thin slices and dried. A kind of mush is prepared from the dried fruit called *Repe*.

Besides the tuberous roots, which are also cultivated in Central America, other kinds are used as nourishment, which are indigenous to the country. Such are *Sanachoria* (Germ. spell.), and *Arocacha*, grown in warm regions. In the elevated regions the natives consume *Oca*, "*Oxalis tuberosa*," which tastes similar to the sweet potato, but is more watery; Ulloa, the roots of "*Ullucus tuberosus*," which are still more watery, and cannot be boiled tender; and *Maschua* (Germ. spell.), the roots of which resemble very much our radishes and possess a similar volatile oil; the last is only eaten by the poorest Indians, and used only as a medicine by persons who are better off.

Very little animal food is consumed by the great mass of inhabitants. For the consumption of the wealthier classes, besides some cattle, principally sheep are killed, and goats near the deserts of Peru. With the exception of the bones, hoofs, horns, and hide, every part of an animal is eaten, the intestines and blood included. The blood of a steer or a sheep is quite palatable. Of the poultry every part is likewise consumed, feathers and bones only excepted.

Cheese is extensively used by all classes, but in very small quantity by the poor, who cannot afford to buy it. It is principally made of skimmed cows' milk, but in those parts of Peru where the herding of goats is carried on extensively, some cheese is made of goats' milk.

On the elevated plateaus of the Andes the principal article of fuel is dried grass of the Páramos; the charcoal which is brought from a distance is too expensive to be extensively used. This scarcity of fuel must undoubtedly have a great influence on the selection of articles for food and their preparation. This circumstance may

account for the absence of *tortillas*, which require a lively fire. In Quito the bakers use small brush with which to bake their bread, and therefore it is half cooked.

Every city and town in Central America is supplied with one fountain or more, and a covered aqueduct; such is only an exceptional case in South America, as for example in Quito and Lima. In other cities which have any artificial supply of water these conduits are real abominations. The water runs in open ditches through the streets; in these every kind of filth is thrown, and everything which needs cleaning is cleaned in the water. From these ditches the water is taken for all domestic uses; as washing, cooking, and even drinking; only a few families send to the fountain or other source for water to drink. It is true that most of the wealthier people filter the water for drinking. This filter is a vessel in the shape of an inverted cone, cut out of a kind of porous sandstone. It is set in the upper part of a wooden frame, and from the low point of the cone drops the filtered water into a *Tinája*, a roundish unglazed earthen jar. The circumstance of being unglazed permits the evaporation of some of the water, by which the rest is kept cool. Good, clear, potable water is rather scarce in South America. The greater part of the mountains being of a volcanic character, that is, either active volcanoes or the products of such, all the water of the springs and streams in some regions, as for example those of the Chimborazo, contain some salts in solution, which is indicated by their milky color. In Peru, again, the streams disappear in the dry season, only pools of water of smaller or greater dimensions remaining in their beds. To these pools the animals go to drink, and the people of the vicinity go to wash their clothes and to bathe themselves; and even use the water for cooking and drinking. This may be one of the reasons why so few people drink water, the greatest number of those who can afford it using fermented liquors. At the head of these in regard to quantity, stands the *chicha*, a kind of beer prepared from maize, as in Central America. A Prefect of a district assured me that nine-tenths of all the maize grown in his district is converted into *chicha*.

A stronger alcoholic liquor is *aguardiénte*, rum distilled from the juice of the sugar-cane. Far the greatest part of all the cane grown is for the purpose of making rum. All classes in South America are infected with the mania for making money by manufacturing or selling this stuff. I saw a Doctor of Laws working a sugar plantation, from the produce of which to distil rum, and a priest running two sugar plantations for the same purpose. The dwelling of the curate of Huarmaca had three continuous apartments. The middle apartment was for his personal use; that on the left served as a storeroom and sleeping-room for his nephew; and in the one on the right this nephew sold rum for his uncle's benefit. And to complete the incongruity, the nephew kept a private school in the same locality where he sold the rum; there being no public school in that village.

Another very favorite beverage is the *Maçamora negra*, a gelatinous gruel prepared from the meal of a black variety of maize exposed to a slight fermentation, by which it gets a very pleasant acidulous taste. In some regions an alcoholic liquor (*chocho*) is prepared from the tuberous roots of the lupine.

The universal garment in South America is the *poncho*. Two strips of cloth,

each about four feet long, are sewed together at one of their edges one-third of the length from each end, leaving the middle third not united. Through the slit thus left the wearer puts his head. The united ends cover the front and back part of the person, and the middle parts cover the shoulders. These *ponchos* are made from a lighter or a heavier cloth; the former of cotton, the latter of wool, according to the climate to which the wearer is exposed. At night it is used as a covering, like the blanket in Central America. The male inhabitants of Huarmaca are known for the great length of their *ponchos*, and the females for the length of their skirts; both of which are made of a thick cloth woven of black wool.

When first I met the Indians in Guayaquil who came down the Andes, I was surprised to find them with rosy cheeks, which I did not observe in the inhabitants of Central America. This proves that rosy cheeks are not a peculiarity of the so-called Caucasian race, but the effect of a temperate clime. Not having made any measurements, I do not venture any further comparison of the inhabitants of these two parts of America.

The disposition of the Indians of South America with whom I came in contact is passive and unaggressive, at the same time they appeared sullen and stubborn, as though they could not be moved by any kind of reasoning, but only by force. The treatment which the Indian has experienced from his European conquerors, and still experiences, is sufficient cause for his present character. The Indian is very saving, wasting nothing and making use of everything. For example, he uses the shoulder-blade of a sheep as a knife for peeling potatoes. The inhabitants in general are more energetic and enterprising than those of Central America. They talk a great deal of the improvements they wish to introduce. In the province of Imbabura are actually two factories in operation producing cotton and woollen goods; and in Cuenca is one for spinning and weaving cotton, though working only with a part of its power, for want of material. The great success of grape culture in Peru, which produces the best grapes I know of, was stimulating the inhabitants of Ecuador to cultivate it also. They intend likewise to introduce the culture of silk, of which some trials have been made already, and a superior article produced. The governor of the Province of Imbabura, besides being a physician, was engaged in five different pursuits. One of these was the manufacture of sulphuric acid, and another the collection of caoutchouc. At the same time they neglect the improvement of the indigenous products, like the potato, or of those which have become naturalized, as the wheat. They are often ignorant of the nature of some products, as for example the indigo plant (*jiguilitœ*), which grows wild in some localities; and where this plant is utilized the indigo is produced only as a liquid, the inhabitants not knowing how to produce it in a dry state. Many of the people manifested an ignorance about any business matter which is out of their line. A curate who received me hospitably informed me of his possessing some mines which had been worked by the ancients, and of his willingness to invest four dollars in working them again.

An insatiable thirst for money has taken possession of all, by which they are alienated from noble and generous sentiments, and induced to practise extortion, especially towards foreigners. I will mention but one instance of this kind. The

man from whom I wished to hire donkeys, which had brought some cargoes of *yucca* to Piura, to carry my luggage to the village from which he came, asked me one dollar and forty cents for each donkey; at the same time he was willing to sell a donkey load of the *yucca* for one dollar and twenty cents; asking me more for transportation alone, than cargo and carriage were worth. It is a general practice of guides, who are invariably paid before they start, to desert a traveller, and to steal from him what they can easily take. The want of kindness and generous feeling I experienced on several occasions. I have been refused repeatedly a drink of water. In one instance the woman whom I asked for a drink, answered, "I am tired;" and on the other occasion the answer was: "water is in the brook, or stream." I will not say by this that all generous feeling is extinguished, for I experienced it on other occasions. A woman who heard me asking for water to drink in the house of her neighbor, called me to hers, offering a drink of *maçamora;* and in the desert of Piura, a woman sold me, through pity, some maize for my starving horses, asking for it a great deal less than its real value.

I found the *Pipe* to be the only national musical instrument. It is of various dimensions. Almost every travelling Indian has one at hand, piping while he walks, just as the women are constantly spinning in and out-of-doors—on the road or in the market. It were interesting to ascertain whether the *Pan-pipe* was known before the conquest, which I do not doubt in the least, and which would prove an independent invention of it on this continent. I have not seen any national dance, nor heard of the existence of one. The only one which came to my notice was of Spanish origin.

There are two kinds of animals indigenous to the country, domesticated by the natives; the Guinea-pig, *Cui*, and the *Runa Llama*, the sheep of the Indian. The *Cui* is in every hut or house, except those in hot regions, the companion of the natives. They are kept in great numbers, and occupy as much space in the room as the family. They are very profitable on account of being prolific, and are used as food.

I met with two varieties, not to call them species, of the *Runa Llama*, the *Paco* and *Guanaco*. Long woolly hair covers the entire body of the *Paco* with the exception of the face. On the forehead is a tuft of long hair similar to the mane of a horse. The head of the *Guanaco*, as well as the neck and the feet up to the knees, has only a short glossy hair, the body and thighs being covered with long wool. The forehead of the *Paco* is broader, its face shorter, and the hip-bones lower than those of the *Guanaco*. The *Runa Llama* is a counterpart of his master, the Indian, when he is free. Its large black eyes look gentle and sagacious, and it carries its long neck gracefully, walking with measured step upon its delicate feet. It is very rarely if ever shorn, only the wool it sheds being collected. Its principal use is carrying burdens, from seventy-five to a hundred pounds in weight. When tired, whether carrying or not, it squats down on its legs, and no kind of coaxing or force can make it rise; it will suffer itself to be killed rather than rise before it is pleased to do so. It has no means of aggression or defence; the only way it exhibits its anger is by spitting. It is as much disdained by the mixed races and descendants of foreigners as his native master, and therefore only owned by Indians. Its rearing is neglected, and consequently it is found only

in small numbers. Its flesh is not eaten, except clandestinely, by the Indians. The food of the llamas consists chiefly of the leaves and tender sprouts of bushes. As contradictory of the general belief that *Pacos* will not travel excepting in herds, I would state that one accompanied me on my travels for several weeks.

The inhabitants of Honduras boast, and justly, that they have no lunatics or suicides. In that country I met with but one case of idiocy in a lesser degree; which is rare all over Central America. In the mountainous regions of the Andes idiocy and imperfect development of the skeleton is very common. The Indian population of Central America are afflicted with a cutaneous disease, the effect of which is a spotted appearance of the cutis. A cutaneous disease of an ulcerating character prevails in South America, not amongst the Indians, but amongst the descendants of Europeans or persons of a mixed race. It is known under the name *Elephantiasis*, and is considered of such infectious character that the police of Ecuador are instructed to arrest any person suspected of being affected with it. Such a person is taken to Quito, and if after examination by two physicians the fact is established, the person affected is sent to the *hospicio* and retained there for life, secluded from the world. This is done because the disease is thought to be incurable. It was impossible to find out whether this malady is of a recent origin or not. However, cases of recent infection are known. One of these was that of a man who visited Columbia on business, and returning afflicted with this disease, infected his whole family. Besides the *hospicio* in Quito there is in the province of Cuenca a piece of land, between two rivers, on which persons affected with this disease are kept under guard, and prohibited to leave. These poor wretches are left to their destiny, receiving no medical attendance whatever. I visited the *hospicio* in Quito, in which I found a hundred and ten persons, from the age of nine years upwards, though none of a very advanced age, nor any of whom I thought to be of pure Indian blood. Forty-five of this number were males. All were afflicted with more or less destructive ulceration in the face or other parts of the body. These ulcerations were of four different kinds. The smallest number proceeded from the real *Elephantiasis egyptiaca*, while some were unmistakably of a syphilitic nature; and others again were *Lupus;* the diagnosis of the rest was quite impossible to make out from a single inspection. All of these ulcers were in a most deplorably neglected condition, which rendered any true diagnosis at first sight almost impossible. One thing is certain; that, under the name of *Elephantiasis*, various diseases are embraced, on account of their not yielding to the application of drugs, with the neglect of all hygienic regulations. Moved by the feeling of humanity, I resolved to try and rescue some of these wretches from their deplorable condition. To this end I proposed to the government to devote my knowledge and time during my stay in Quito to these wretches, if the government would furnish me with all the hygienic and therapeutic means I should require. This offer was not accepted, the government having spent, in former years, money for the cure of these unhappy ones without success; and as the native doctors, who have seen the disease during many years, were unsuccessful, how could a foreigner, only recently acquainted with it, succeed better? However, a physician of high standing in the city came to me to buy my recipe for curing the malady, offering

as much as ten thousand dollars. My answer, that I had no secret remedy whatever, that my hope of relieving the unhappy people was founded on the possibility of finding the true diagnosis of each case, and then to act accordingly, he took for a subterfuge.

I must allude here to the general neglect, in those countries, of hygienic measures. Any such contrivances as privies do not exist, excepting in Lima, and perhaps a few in Quito. The streets of the cities and towns are more or less the receptacles of the excrements. The males void theirs in the yard, when they have access to any, and the females make use of the urinal, which is emptied after dark in the street. The hogs perform the duties of scavengers. In Guayaquil is a bathing establishment in the river, with a privy attached to it. To this resort the wealthier classes, not for the sake of bathing, but for the use of the closet. In Lima a barrel is placed in a small enclosure on the flat roof. In a hole on the top of the barrel is placed a wide funnel, to which a few steps lead. Personally this barrel is seldom used, but the contents of the night-pot are emptied into it. Every few days it is removed, to be replaced by an empty one, which is done by a private concern especially established for that purpose.

I found the Republics of Ecuador and Peru rich in archæological remains of various kinds. Many of the most interesting of them have not yet been described on account of their situation away from the high roads usually travelled by explorers. I consider them most interesting on account of their having preserved a great deal more of their original structure than those which have been converted into Christian edifices and have thus lost their original characteristics; such is Cuzco and Casaxmala.

All the architectural remains were portions of public edifices, and none for individual use, excepting the palaces of the Incas. These remains can be divided in three classes. First, roads, together with buildings for the accommodation of travellers, and aqueducts; second, those of a military character, as forts, fortifications, etc.; and thirdly, such remains the character of which I do not venture to define positively, whether it were of a religious, social, or political nature.

It is an interesting fact that architectural remains, found more or less frequently in all the rest of the country visited by me, do not extend quite so far north as the present limit of the Republic of Ecuador. Beyond that I have not seen nor heard of the existence of any.

From Guayaquil, where I first touched South America, I went to Quito. On the road, near Quaranda, in the region of Chimborazo, I met with the first work of the ancients. It was a tunnel excavated through a ridge, to serve as a channel for a river. From Quito I went first to the east on the path leading to the river Napo, beyond the village Papallacta, for the sake of studying the formation of the eastern Andes. Descending the road on the mountain Guamani, the highest point of which is over 12,000 feet above the sea, I met with a company of Indians from Napo, walking in single file, staff in hand, carrying their provisions on their backs. They had no dress but a piece of cotton covering their loins. They were young men, slenderly built, rather taller in stature than the other Indians of the country, and with more expression of independence in their countenances. Such

troops often come from the Napo to Quito, and many of them have perished, being caught by a snow-storm while passing the Guamani. They bring gold washed from the sand of the Napo, and desiccated birds, and take back blankets and other manufactures of wool or cotton.

Papallacta is a purely Indian village. Only two male inhabitants could speak and read Spanish. One of these was the *Teniente politico*, the highest in authority. I found but two aged men at home; all the other males were in the woods, many miles off, where they pass most of the year in making *bateas*, wooden ware, mostly troughs for bakers and kitchen use. The women and children go backward and forward, preparing the food at home, and carrying it to the men, and bringing back whatever they have manufactured. The food consists of small potatoes boiled, and Windsor beans, the only crop they raise. One or the other family keeps a cow or two, but the cheese they make is not eaten at home, but sold in the next *hacienda*. At times snow falls there to the height of several feet and prevents their leaving the house. One of the occupations of the *Teniente politico* was making harps, an instrument very much in favor in Ecuador.

On my journey to Papallacta I had to stop two days on the *hacienda* Tablon chico waiting to get a guide and a horse; and, on returning, one day on account of rain. This gave me a good opportunity of informing myself with reference to the condition of the laborers, who are Indians.

A family that wishes to settle on the estate gets the use of two or three, but never more than four *quadras* of land to cultivate. One *quadra* is a square of three hundred feet. They are allowed to take the materials to build a house from the estate. For the use of this land the man is bound to perform every day, rain or shine, the work required from him, except on Sunday, when he can attend to his land. Between three and four o'clock every morning all must come to the verandah of the house of the *mayor domo* to recite the *Doctrina* (doctrine of the faith) and some prayers. After that they must go to collect the cows; or perform some other work, while the women are milking the cows. When the sun rises all have half an hour to take their breakfast; after which the regular day's work commences, lasting without intermission till six o'clock in the evening. As a favor a man can get excused from working a day in a month. For this work he gets little less than half a real, five cents, a day; not in money but in necessaries (*Socorro*), which are maize, barley, etc. This he receives whenever he applies for it, and at the end of the year the balance is made, which nearly always proves to be in favor of the owner of the *hacienda*. In very rare instances a balance of three or four reals is in favor of the laborer. If he gets his meals, one in the morning and the other at night, from the *hacienda*, he gets no pay. His wife and children are likewise compelled to assist in weeding and other such work; for this they get no remuneration whatever. The women have besides to milk the cows, for which they get a New-year's present of four reals, mostly in the shape of cotton goods. The laborers are allowed to keep animals, such as cows or horses. For the pasture of each head he gives two days' wages in every week. Besides this the laborers have to pay the tenth part of all they raise as *diézmo;* half for the church and

the other half for the government. In former years they had also to give, as *primicia*, every first-born animal.

The consequence of this system is that the greater number of the laborers are in debt to the proprietor of the estate, and some to the large amount of twenty dollars and more, which is almost equal to two years' wages, at one dollar a month. From this indebtedness he is never able to extricate himself. A further consequence is the general thieving, principally of the ripening crop, and especially of potatoes. In spite of all these unfavorable conditions there are families who possess sheep, swine, one or two cows, and even horses, as proof of their industry and frugality. It was such a horse I had to get for my journey, as the *mayor domo* refused to hire any belonging to the estate.

As I mentioned before, I spent three days in this *hacienda;* and the only nourishment I had during that time was that of the family of the *mayor domo*, consisting of broken barley boiled in water and seasoned with some leaves of the wild turnip. There was absolutely no other food on the place except milk, which the *mayor domo* was forbidden to sell, having to send the fresh cheese as soon as curdled to the lower *hacienda*, where it could be sold. The elevation of the *hacienda* is so great that nothing besides potatoes and barley ripens; and the ground is principally used as pasture for cows. The building in which the *mayor domo* lived had three apartments. The middle one was the family room, containing no other furniture whatever except a bedstead; its floor being the uneven soil, as dirty and dusty as the road. The second apartment was used as a kitchen, and in the third the hogs made their home. Notwithstanding this abject poverty the infant had on a lace shirt; true enough, it was ragged and dirty as the soil, having probably not left its body since the day of the baptism, when it was put on. Eleven emaciated, starving dogs were round the house, for which there was not the slightest occasion. I could not comprehend how these dogs kept alive, receiving only the scanty remainder of the family's meals, unless by eating herbs, which I saw them do.

The work on the *haciendas* near Quito is performed by three classes of laborers. The first are *Gañanes*, that is, those who live as settlers on the estate under similar conditions as those above given; with the exception that their pay is a full half real, and that the women likewise receive pay for their work, as milking, etc., a quarter of a real a day. The second class of laborers are called *Yana perros*, black dogs; they are men who likewise receive a piece of land to cultivate, for which they are obliged to work two, three, and even four days every week, according to the size of the land they occupy, without any pay. Last are the *Peons*, laborers that do not live on the estate, and who, when at work, receive a real a day.

It can be seen from these indications that the condition of the laborers on a *hacienda* is nothing better than a kind of slavery. One of the consequences of this condition is, as already stated, general thieving. The following facts, which I have observed, show how profitable this system is to the landowners. In the valley of Machache I have seen twenty-two ploughs at work on a piece of land about ten acres in size; at another place ten ploughs were going in a lot of five acres; and near Guamote, on an acre, eight men with two overseers and the *mayor domo* of the *hacienda* were engaged in digging the potatoes. The three last-named persons

were only watching the eight laborers. The digging was mostly performed by the hand, the hoe being seldom used. A little way behind the men were their wives and children, searching for the potatoes which were left; and this second crop was almost as abundant as that secured by the men.

From Tablonchico I directed my steps northward with the intention of going as far as the Rio Mayo, where, according to the geographers, is the northernmost union of the two Cordilleras de los Andes, and where they separate into three divisions, which never unite again.

I went to Cayambe, situated in a plain where, it is said, milk in place of water is flowing in its streams. I visited there one of the structures which still preserves its native simplicity, and is called Punte Achil, of which I made a drawing. It is a quadrangular earthwork erected on the slope of the middle of three hills, situated in the rear of the town. The sides parallel with the base of the hill are 513 feet long, and the ends 250 feet. A steep embankment in front is fifty feet high; one in the rear twelve feet, and those at the two ends vary correspondingly.

At about 418 feet lower down the hill are the remains of another rectangular earthwork, of which the part remaining is 256 feet in front and rear, and 105 feet on the end left standing, the other being washed away. The lower front of this earthwork exhibits an embankment forty feet in height; on the upper side the embankment varies in height from six to nine feet. These two earthworks are united by a graded road, forty-five feet wide, with embankments on the sides. It joins the upper earthwork near the middle of its front. From the front of the lower earthwork the remains of a road are seen on the general level of the ground which appears to be the continuation of the road uniting the two earthworks.

This entire structure was built of irregular blocks of dried clay about a foot in length. These blocks belong to a formation which is visible further north. Their appearance would lead to the supposition of their having been formed artificially rather than by natural action, were it not for the fact that high hills are formed of the same material. It is called by the inhabitants Cangawhua. In the neighborhood are many "tumuli" and other artificial elevations of the soil. The symmetrical shape of the two hills, on each side of the middle one on which the structure is erected, seems to indicate that they are partly if not wholly artificial.

I was told that, some leagues distant, on the *hacienda* Guachalá, between the town of Cayambe and the village of Cangawhua, were the remains of an ancient fortress, Pucará, a term applied to all the ruins of ancient fortifications of which the name has been lost.

From Ibarra, in the province of Imbabura, I visited Lake Aguarcoche, or "lake of blood," so called for the reason, it is said, that a battle fought near it in ancient times was so desperate as to redden the water of the lake.

In my further progress on the road to the State of Cauca I was informed in Tuno, where I stayed overnight, of the existence of ruins on the *hacienda* Pucará. This was the last information I received of any ancient ruins in my travel north. This fact appears to prove that the country and its inhabitants north from Tuno were under different conditions from those living south of it.

The Columbian Confederation in which I travelled offered the rare spectacle of

a government more progressive in its tendencies than its people. With other nations the case is reversed, the governments being more conservative than the people. Under the presidency of General Mosquera the government had abolished all monasteries and nunneries; their landed property was ordered to be sold for the benefit of the respective communities, and in the year before my arrival in that region all superfluous churches were closed and ordered to be taken down. In Pasto, the capital of a department of Cauca, private individuals gave the nuns houses to live in; at the auction of the confiscated lands of churches were no bidders; and the laborers refused to pull down the churches for the erection of other edifices, fearing excommunication, proclaimed by the Pope. Nevertheless, the Pastusos are less bigoted than the inhabitants of Ecuador. I heard a justice of a village, whom a priest, a former brother of a closed convent, asked if the villagers would not like to celebrate a festival with a mass, answer: "Saint Peter does not need any mass; the masses are only for the benefit of the clergy."

In former times the inhabitants of Pasto and the State of Cauca enjoyed a high reputation, even in Ecuador, for their kindness, honesty, and hospitality; but the character of the people has greatly deteriorated by a series of revolutions in the confederacy. At the time of my visit, political brawls combined with bloodshed, and even ending with murder, were common occurrences; and the regular subject of talk was revolutions, the past and the coming. The Pastusos are more courageous than the Ecuadoreños, which was proved in the last war between Columbia and Ecuador.

Cups and bowls, which in the hot regions are made of the fruit of the different calabash trees, are manufactured of wood in the elevated regions, in all shapes and sizes. The principal industry carried on in Pasto is the varnishing of this wooden ware, *bateas*, which is done in a peculiar way. By the mastication of the tender sprouts and buds of a plant brought from the mountainous region of Caguetá the resinous portion is separated from the fibrous, which latter is spit out. The resinous portion, called *liga*, is then stretched as thin as possible by the aid of heat, when it is quite transparent. It is then applied to the wooden article and made to stick by the help of charcoal heat. The vessels are usually painted red at first, after which they are further ornamented with flowers of various colors and even gildings. These colors are imparted to the *liga*, which is naturally greenish-yellow, by chewing with it some coloring substance, as indigo for blue, saffron for yellow, indigo and saffron for green, and the juice of a plant from the neighborhood of Caquetá for red. To imitate gold, silver foil is laid between two layers of the *liga* colored with saffron. Flowers or other objects are cut out of the *liga* with a pair of scissors, and separately affixed to the article with the aid of heat. The varnish is soluble in alcohol and even a spirit of less strength; but they continue to work in the old fashioned way, preferring to drink the spirits rather than use them as a solvent. Both the *liga* and the sprouts from which it is extracted can be preserved for a considerable time in water, if this is often changed. If they get once dry they cannot be used again.

Another branch of industry for which Pasto is celebrated is carpentering, especially in constructing trunks, boxes of different sizes, and furniture of inlaid wood

of different colors. The two first-mentioned articles are exported to other countries. For the manufacture of all a species of oak is used, in which pieces of other kinds of wood of the requisite color are inlaid.

While in Pasto I had occasion to see some of the Indians inhabiting the Caquetá mountains. They were tall, slender men, with open countenances, and long black hair floating from their uncovered heads; looking as if they belonged to a different race from the inhabitants of Pasto. They bring to the city the sprouts for making *liga*, and the red coloring substance, and also the bark of Cinchona trees, beeswax, a vegetable wax, and Cacao, a wild species, the kernels of which are round and somewhat thicker than a goose-quill.

In my travel to the river Mayo I had to cross the river Juanambú, rolling between two high banks, by means of a contrivance called *tarabita*, consisting of a rope twisted of five or six straps of raw cowhide, each about an inch wide, stretched across the river and fastened to a tree on either side. Over this rope is placed a Λ-shaped piece of hard wood about three inches thick, its legs about two feet long hanging downward. The ends of the legs are united by a similar rope of raw hide, forming a triangle. To the legs and the uniting rope are attached the traveller's saddle and small luggage, leaving space in the middle for his person. A rope sling of raw hide (called *cabrestro*) forms the seat; the ends of the sling being secured to the wooden legs, for supporting his back. Within this rude chair the traveller takes his seat in a somewhat crouching position, holding on to the wood or rope with his hands. He then, lifting his feet from the ground, slides down the rope to the opposite lower bank, propelled by his own weight. Arriving, he frees himself and his luggage, when the travelling chair is pulled back by a single cowhide strap attached to it. In this manner all passengers and freight have to cross the river, while the animals are conducted to a ford, where they cross partly by swimming. In returning, another *tarabita* a short distance from the first has to be used, as the bank of the river must be higher on the side of starting.

From the river Mayo I returned to Quito; and thence travelled on the height of the Andes toward Peru. On the plain of Mulaló I found a hill from three to four hundred feet high, which by its isolation, being unconnected with any other hill, and its symmetrical conical shape, impressed me with the idea of its being the work of men. This supposition was confirmed by the inhabitants of the vicinity.

When further on I approached the ancient road leading to Cuzco, architectural remains became more abundant. This road, built of stone, follows the undulations of the ground, which often necessitated high embankments, especially when situated on the slope of a mountain. The sides of the hills between which the river Cobschi (Germ. spell.) flows, and which I had to cross, had the aspect of terraces, on which the remains of ancient walls were discernible. Similar remains were also found in the vicinity of the village of Achupallas, situated on the top of one of the hills just mentioned. In and near this village were found many ancient graves. I received the skull of an animal which had been taken from one of these graves, many of which had been searched, but in vain, for gold. Descending the mountain Azuai, of which the highest point reached was 13,000 feet above the sea, I came on the actual remains of the ancient road. A thousand feet below the

point above mentioned were remains of two buildings of considerable dimensions, the walls of which were still several feet above the ground. One of these buildings is said to have been a caravansary (*tampu*), for the accommodation of travellers, and the other a palace of the Inca, who also had artificial baths in the adjacent lake, a hundred feet lower. The brook feeding this lake flowed in a tortuous artificial bed. These ruins are known under the name of Paredones. Six miles further south and 2000 feet lower than the Paredones are the ruins of an edifice called *Inca pirca*, wall of the Inca. It is supposed to have been once a castle, and is also designated as *Castillo*. This supposition is founded upon the shape of its structure. It was oval in form and built of squared stone, two stories yet remaining. Those of the second story are so nicely adjusted as to fit perfectly without any uniting material. The outside of these stones is so smooth as to appear polished. The stones of the lower story, which has a greater circumference than the upper, have been cut and united with less accuracy. The remains are but a small portion of the former structure, which has been demolished by degrees, and the stones carried away for the construction of dwellings in the neighboring settlement of the same name. Artificial baths surrounded the pond in the near vicinity of the ruins; and in the adjacent plain, which undoubtedly once formed a garden, singularly shaped stones are found, which were probably used in athletic games.

The surrounding country of Cuenca, the capital of the province of the same name, where I stayed some days, is very interesting in its natural history as well as its archæology. Many ancient graves have been opened, in which valuable objects made of silver or gold were found. Many fabulous stories were narrated about them, as the finding of crowns, sceptres, etc., and also concerning their great value. It was said that a man had realized sixty thousand dollars from the gold in the objects which he found. All such stories must be taken "*cum grano salis.*" It is principally in the vicinity of the village Chor-de-leg that many ancient graves were found. The inhabitants of that village made a business of searching for the graves and opening them. This is done with an iron rod several feet long. If the rod enters easily into the ground it is a sure sign of a grave on that spot. If it touches a heap of stones it is a sign that the grave contains objects of gold. In Cuenca I was told that the man who makes a business of opening such graves was very successful, and had many objects of gold at that time; but, inquiring throughout the village of Chor-de-leg, I saw but one small figure, about an inch long, and some ear-rings of gold, besides three other small figures of silver. But there were many interesting objects of inferior materials, such as a brooch over a foot long, similar ones of smaller dimensions being still used; various implements of copper; polished and perforated ornaments of pyrites, and some beads of coral. There were likewise specimens of pottery, one of which was a double whistling jar, one of the openings representing the mouth of a squatting animal. I saw also many stone implements of various sizes and patterns; two stones, round at one end and plain on one side, with two rows of six squares carved in each, similar to the squares of a chess-board.

Chor-de-leg lies at the foot of a hill, on which are walled terraces, which indicate that it may have been a fortified place.

On my excursion to Chor-de-leg I visited the sugar plantation Schumir (Germ. spell.), where, as all over the country, the most part of the juice of the cane is converted into rum. I found there, for the first time in my travels, a large orchard containing several thousands of fruit trees, occupying eight *quadras*, each *quadra* being a square of three hundred feet. But the trees were in a deplorable condition, covered with moss and other parasitic plants.

From Cuenca, travelling south, I passed, on the plain of Targui, the southern monument erected by the French when measuring the meridian, having already seen the northern one in the plain of Yarugui.

On the slope of the hill near the village of Cumbe I found traces of ancient walls. In this village I witnessed the celebration of the "*Corpus procesion.*" From all the neighboring country the people came to witness it. That part of it which most attracts them is the dance of the devils, performed by Indians in disguise. It is begun in the church, near the altar, before the procession starts. The dancers keep near the officiating priest all the time of the procession, and re-entering the church, conclude with a dance near the altar.

Three miles south of the village of Nabon I found on the road remains of the walls of an extensive structure three feet high, similar to the Paredones on the Azuai mountain, and called Dumapara. In Oña I was informed of the existence of ruins in three different places, which were called Pucará, Ingapirca, and Paredones. These names indicate that they represented three different classes of structures: a fortification, a habitation of the Inca, and a building for public use. In the Indian town Saragura, which I passed in my progress, are still preserved some of the ancient customs respecting travellers. There is a public building (*tampu*) for their accommodation, and every year three men are elected as governors of this edifice, whose duties consist in providing all necessaries, such as food for himself and his animals; guides, beasts of burden, etc. The fee they get is a *real* for each animal provided, and half a *real* for a guide. I was informed that in the vicinity of the new settlement San Lucas, which was peopled by immigrants from Saragura (the latter place containing, it is said, from 8000 to 12,000 inhabitants), are extensive ruins of ancient edifices known as ruins at the time of the conquest by the Spaniards. These remains are called *Tampu blanco.* They have been searched for gold, but without success; as is generally the case in that section of the country.

On my entering Loja the octavo procession of "*Corpus*" was being celebrated, which I had seen three days before in Oña. In those countries all festivals last eight successive days, usually commencing a week before the day of the feast.

Loja is the capital of the province of the same name, and the city of which Bolivar said: "This population is either nearing its end, or just beginning." It does neither, but continues to be in a state of chronic disorder. There is hardly a house in perfect order; all are either undergoing repairs or needing them; and before the repair is finished, that part first done needs repairing again. A letter of recommendation from the Minister of the Interior secured me the attentions of

a gentleman who considers himself the most generous in Loja, receiving in his house all travellers of distinction. There is a great deal of the Spanish *hidalgo* character still to be found in this city. When, some years ago, the rumor was afloat that the Pope was contemplating leaving Italy, the citizens of Loja offered him their hospitality, inviting him to reside amongst them. It was believed that in the district of Malacatus, so celebrated for its flora, is the place where the great treasure coming from Cuzco to ransom the Inca Atalwhuapa (Germ. spell.) was buried by the Indians on receiving the tidings of his death. A short time before my arrival a. new company was formed in Loja with the object of searching for this treasure, although many companies previously formed with a similar object have failed to accomplish it.

After leaving Loja and arriving in the village Cariamanga I found no one who could guide me to a path leading to Peru over the heights of the mountains, and I had to take the usual one through the desert of Pura. In Cariamanga a kind of flour is made from the roots of a species of Maranta, which is called *Sago* and *Tapioca*. It is used for making sweet cakes, and on that account is so much sought for that its price rises, at times, to forty cents a pound. Another kind of flour is made of the roots of *Canna indica*, of which I found there two varieties, one with red, and the other with yellow blossoms, which are called Achia, and the flour Chuno, from which the finest biscuits are prepared.

There is a great deal of carrying done on this road between Peru and Ecuador, on the backs of donkeys, as they are the only animals, besides the goats, which content themselves with the leaves they nip from the trees and bushes growing in the desert. All other animals have to be nourished with the *Algarobo*, a fruit similar to the St. John's bread, which has to be carried for that purpose. The inhabitants also use this fruit, preparing from it a kind of mush, *maçamora*. The principal article of the commerce is salt, brought from the mines in the desert of Sechura, and brown sugar, *dulce*, is taken in return.

Although thieving is the crime most frequently committed in those countries, on the borders of Ecuador and Peru it is appalling. The *Escribano publico* of Cariamanga showed me a list of four pages, foolscap, containing the names of fugitives from law in that district, the greatest number of them for stealing. The proprietors and overseers of *haciendas* in Peru near Piura complain of the great number of animals stolen every year. The cause of this enormous increase of crime in these regions is the facility with which the perpetrators can evade punishment by simply crossing the frontier, which liberates them from prosecution. For that reason a thief, when caught, is summarily punished by the injured owner by giving him a good thrashing. It appears that in those countries theft is considered not so much a legal crime as a sin. The lad who, on the first day after my arrival in Quito and on the first day after entering my service, stole the box containing my spare watch and watch-springs, though convicted of the theft, a couple of weeks later was acting as the janitor of the convent of Recoletos, whereto wealthy persons frequently retire for a time to repent of their sins. The Prefect of Piura, to whom I offered my services as a witness to commit the three Arrieros with whom I passed the desert of Piura of the theft of goats, made no use of that offer, saying

only that more stringent laws for protecting the breeding of animals would have to be passed.

From Piura I travelled toward the Andes, traversing the desert this time to the east, as I had crossed its northern portion when coming to Piura. In the first village I came to, called Encantado, I found many tumuli, which were burial-places of the ancients. In those which had been opened nothing but some pottery was found. There was but one earthen vessel in the village thus obtained, which the owner would not show me without being paid for it.

As soon as I entered the region of the mountain spurs I found the remains of an imposing aqueduct, extending for many miles. Its object seems to have been twofold: first, the irrigation of the desert of Piura, and the prevention of the overflowing of the river of the same name. This latter object was achieved by receiving all the streams on the left side of that river.

On a hill near the *hacienda* Coco was a wall eight feet high and six feet thick near the ground, extending from the base of the hill to its top, where the remains of edifices likewise were seen. At the beginning of the defile which leads to the high lands of the Andes and where it makes a sudden angle, a seat was cut in the almost perpendicular rock, around which the road bends, undoubtedly for the accommodation of a sentinel; and some distance further on was a niche in the rock about six feet high and three feet deep, with an even bottom and rounded on the top, most likely for a similar purpose. Having ascended the high lands and starting on from San Felipe, the guide who was to conduct me was so drunk as to be unable to keep the saddle, and I had to stop in a solitary house on the road. The owner of it was absent in Pomawhuaca (Germ. spell.), a hamlet of four houses, where the feast of the patron was being celebrated, and only his daughter and granddaughter were present. I could not induce these women to sell me some of the green maize-stalks growing near the house; they gave as an excuse the impossibility of getting anybody to plant the maize again. I offered to plant for them as much as they would sell me, but they would not even allow me to weed the lot, which was overgrown, hoping my horses would eat some of them. So I had the painful feeling again of seeing my horses starving.

The next afternoon I reached Pomawhuaca at the conclusion of the feast. These occasions last eight days, the celebration consisting in drinking day and night without intermission. There I could buy some grass, but nobody was willing to cut it; so I had to do it myself with a knife. I found there again the indigo plant *Jiguilite*, growing wild, the people not knowing its properties. To get to the next village, Pucará, I had to pass a river on a kind of raft (*balsa*) constructed of three trunks of trees of very light wood, about fourteen feet long. These stems form the sides and centre of the raft, and between them is a bamboo four inches thick. These five pieces are fastened near their ends to a piece of wood lying across. Between the stems and the bamboo are open spaces to give the raft more width. To protect the luggage from the water coming through these open spaces some brush is laid on the top of the raft, and the baggage is placed on this. For the same reason the passenger has to pull off his shoes and socks, if he has any on, and roll up his pantaloons, as the raft submerges almost entirely when any weight is put on it. Luggage and passenger have therefore to cross separately.

The inhabitants of Pucará were celebrating the *Novena*, that is, the eight days preceding the feast of the patron of the church. As the name of the village designates, there were on the other side of the river, on the top of the hill opposite the village, ruins of ancient walls, named Pirca. In the vicinity of Querocotillo, which I reached that evening, were seen on the side of the road many regularly hewed stones, undoubtedly the material of ancient buildings. Very interesting ruins were visited near Whuambos (Germ. spell.). On the top of an isolated rock were ruined walls still of a considerable height, reminding one very much of the ruins of a feudal castle in Europe. In the bottom of the rock were two entrances cut, but they were blocked up by the *débris* of the ruined walls. Near one of these entrances was a seat cut in the rock for the accommodation of a sentinel.

The owner of the *hacienda* Molle Bamba informed me after I had passed it, that walls several feet high, remains of structures of considerable extent, were found there.

While in Chota an eclipse of the moon took place. This caused the people in the suburbs and surrounding country to shout, and to excite the dogs to barking, the fowls to cackling, and the roosters to crowing, in order to drive away the darkness and awake the moon.

The owner of the *hacienda* Yanacancha, where I slept one night after having passed the celebrated silver mines of Whualgayoc, informed me of the existence of many ancient graves there which contain objects of gold. He assured me that his father, who opened several of these graves, realized 15,000 light dollars from the sale of the gold articles found. They were of exquisite workmanship, and some of them resembled woven gloves.

In Casaxmalca (*casax*, "frost, ice"; and *malca* or *marca*, "the upper part of an edifice"), erroneously spelled and pronounced Caxamarca, very little is seen of the ancient city, its edifices having been destroyed and the material used for erecting convents and churches. The best preserved structure is the reservoir, a few miles distant, which served as a bath to the Incas, the spring being warm. On a hill close to the city is a seat cut out of a rock in the shape of the double chair which is at present called *tête-à-tête*, showing that this form of seat is not of modern invention.

Before getting to Chuxsin, where I was hospitably invited to pass the night, a bed of mattress, blankets, and clean sheets being prepared for me, I passed the inclined plane of Yamobamba, on which I observed many ruined walls of extensive structures in such number as to warrant the assumption of an ancient city. Arriving in the town of San Marcos, I was obliged to remain there some days on account of the celebration of the feast of the patron of the town. This gave me occasion to witness some cock-fights and bull-fights, which formed the climax of the feast. In the forenoon the men attended the cock-fights, and in the afternoon the bull-fights took place. Both of them were cruel and pitiable entertainments. The cocks were armed with gaffles three inches long and extremely sharp. These fights took place in the square of the town, the avenues leading to which being fenced in so as to be closed during the bull-fight, and open the rest of the day. Before the bull is let into the ring he is decorated with colored paper and cloth,

and wounded in the nose to excite his rage. As soon as he enters the ring he gets frightened by the yelling of the spectators, and instead of attacking the Torreros who seek to fight him, he runs around the square looking for an outlet to get away. To make him fight the *Torreros* on horseback and on foot keep around him, holding their *ponchos* before his face, which he wards off with his horns and rarely attacks man or horse. If he does, footman and rider fly to keep out of danger. *Torreros* and spectators keep yelling, the latter also discharging rockets. All this increases the anxiety of the bull to get away. When the *Torreros* get tired of chasing the bull, and lack the skill to kill him by the artistic stroke in the neck, they wound him with their swords on the legs, belly, or other part of his body; and, to prevent his escape, cut the sinews of his legs until he falls down to receive the last stroke. After dispatching one bull, another is brought into the square to be treated in a similar way.

These bull fights lasted four days; and every day four or five bulls were killed. Every year a committee is chosen called *mayor domos*, to arrange and defray the expenses of these festivals. Each *mayor domo* has to furnish a bull, and on the day his bull enters the square he gives a dinner to his acquaintance. To such a dinner I was invited, together with the family of the highest official in the town, in whose house I resided. Other families received their friends in the afternoons and evenings, to whom various cakes and alcoholic liquors were offered.

I was detained in San Marcos eight days, it being impossible to hire any beasts or to find a guide who would leave the place before the conclusion of the festivals.

The next place of importance which I visited was Whuamatschuco (Germ. spell.). In fact the neighborhood of that town is the most interesting part of Peru to the archæologist on account of its majestic ruins, which deserve a special survey.

First of these, about two leagues to the southwest of the city, is Marca Whuamachuco, which was the strongest fortress of the Incas, and looks as though it had been constructed by a modern engineer. It occupies an area two miles long and a mile wide, on a hill, or rather a group of hills. The most conspicuous architectural remains are on the tops of these hills. Some of them are twenty feet high, and most of them belonged to edifices of a quadrangular form. The corners of these were of hewn stones with their longest axis perpendicular. The remainder of the walls was built of rough stone with their flat side outward in such manner that the front of the wall presented an even surface. The interstices were filled with a material consisting of sand and small stones without any indication of lime.

The most interesting structure was one of a roundish form without being strictly circular. It had two walls, eight feet apart, which were still twenty feet high, three feet thick near the ground, and something less at the top. The space between these two walls had been divided into three stories, each nine feet high. There were very few windows, some one foot, others two feet square. The doors were two feet and a half wide and six feet high. They were not arched, their lintels having been of wood, as is indicated by the empty space which they once occupied. The ceilings of these apartments were once likewise of wood, the beams resting on projecting stones. On the space occupied by the round structure were remains of quadrangular edifices divided into several apartments each.

Another very interesting structure was one, the wall of which commenced in a ravine on the side of the hill and ended at the top in a semicircle with a turret at each end.

These ruins are the first in which I found a spring, the course of which seemed to have been regulated by conduits. Several fortified *enceintes* on the different elevations had surrounded the whole city, and on every salient angle of the rocks were erected walls. The old stone road of the Incas was passed in a tortuous manner to the top of the hill.

Outside of these fortifications, at greater or less distances, were many remains of edifices. Near one of these, having extensive dimensions, was a circular well more than twenty feet deep, containing water. The top was covered, except an opening one foot square. Near this opening was the head of an alligator sculptured in a porphyritic stone, twenty inches long, thirteen inches high, and ten inches wide. Other sculptured stones representing animals were likewise found; one was in the yard of the house in Whuamatschuco where I was quartered.

In my going to Marca Whuamatschuco I observed at the base of these hills, away from the road, an entrance built of stones, leading to the interior of a hill.

Other extremely interesting ruins are those of Viracocha Pampa, edifices dedicated to the God of War. They are about three miles south of the town. The entire mass of these structures is divided into two unequal portions by a paved road between them twelve feet wide. The portion on the east side of the road is much the smallest. The western half seemed to be one immense cluster of buildings with no sign of any road or path for separation. The portion facing the road had two parallel walls eight feet apart. The space between these walls was divided into many smaller squares by transverse walls without any sign of communication between the apartments. The main body of the structure is formed of square apartments of larger dimensions than the first, which enclose again squares of still larger size. Some of these latter measured seventy-six feet in length and seventy in width, and others but fifty-two feet by twenty-eight. It is a singular fact that the many apartments in these buildings did not communicate with each other, and very few had doors. The entire structure is surrounded on the three other sides by large squares inclosed by a single wall, which undoubtedly were used for gardening purposes. The standing remains of the walls were not over twelve feet high at any point, and three feet thick to the height of eight feet, above that being only twenty-six inches. They were constructed of rough stones cemented with an earthy mass of sand and small stone—fragments apparently without lime.

The ruined walls on the eastern side of the road seemed also to have belonged to one large structure, surrounded likewise by gardens. Both parts of these ruins serve as a pasture to sheep, goats, and a few cows.

Three miles to the southeast from the town is Sason, another ancient city on the top of a hill. In fact most all the hills in the vicinity of Whuamatschuco are crowned with ancient ruins, and on the road leading south a fortified gate was still visible. All this would indicate that this was not a solitary fortress, but that the entire district was a chain of fortified places.

In Whuamachuco I had likewise occasion to observe the effects produced by the

celebrated *coca*. The use of this plant is by no means so harmless as is represented by its admirers. The men I saw were miners, who used the *coca* daily. Their external appearance presented the symptoms of a cachectic decay of the system. Their bodies were thin and rather emaciated, with a sallow color of the skin; and any person once familiar with these symptoms could easily recognize those who use the *coca*. The property of alleviating hunger ascribed to *coca* might be compared with that of tobacco and rum. Those who use these poisons claim likewise that they are a substitute for nourishment. The use of *coca* is surely not less destructive to the organism than alcohol, but a great deal more so than tobacco.

Owing to a revolution in the country I was unable to visit Lima by an overland route, and was compelled to go to Trujillo, where I visited the pyramidal structure of sun-dried bricks known as the Temple of the Sun, and the celebrated ruins of Chimu. Many fabulous stories were current in regard to the great treasures which were found in Chimu and those which are still supposed to be hidden there. I shall not say anything about these places, as Mr. Squier had made a special study of both.

In Whuamatschuco, the port of Trujillo, I embarked in a British steamer for Lima. While waiting I observed with admiration the dexterity with which the fishermen were able to brave the surf in coming to and going from the shore in their little canoes. This canoe has a peculiar shape, almost that of a *skate*, only that it is round and with an upright point in front. It is constructed of thin bamboos, with an opening in the middle in which the oarsman kneels, and in which he puts anything he catches. As an oar he uses a double paddle of split bamboo five feet long and five inches broad at each end, narrowing towards the middle. One man occupies and manages the canoe, riding the surf as if it were the easiest thing in the world.

In Lima I witnessed the height and end of the revolution. During a street fight I heard the whistling of the bullets, a few of which struck the college in which I was located. The resignation of the President of the Republic put an end to the revolution.

The Peruvians are very anxious to promote foreign immigration; nevertheless the congress in its session before my arrival passed a law by which foreign-born citizens are excluded not only from the presidency and vice-presidency of the republic, but also are not allowed to be ministers, members of congress, and prefects of the departments; and this applies even to those foreign-born citizens who fought and bled in the war for independence.

One thing is certain; however defective the character of the Peruvians and of the inhabitants of other countries of tropical America may be, it is, as a general rule, superior to that of the Europeans and North Americans residing in those countries. The truth of this can be best seen in those regions which are rarely or never frequented by foreigners, and consequently have not been so much contaminated by European vices. On the other hand, those native-born citizens are the worst who have travelled abroad, or who are in continuous or frequent intercourse with foreigners. An Italian merchant in Casaxmalca assigned very acutely the reason for this. He said: "There are but two classes of foreigners who come to this country; the

one comes for scientific purposes, and the other to make a fortune." This latter motive forbids the growth of any generous or philanthropic feelings. Many of the foreigners in the different states of tropical America are married to women of the country. To do this they must become Catholics, and baptized if they were not Catholics before. It is an interesting fact that in all my travels I never met with a case in which the native-born bride abjured the Catholic religion and adopted that of her husband.

In Ecuador I collected a vocabulary of the Kichua language, which I augmented during my travel. It was impossible, however, to get the meaning of the term *velica*, which combined with *whuanca*, forms the name of a city in Peru, Whuancavelica. I was very anxious to find the meaning of that word, as it is a term likewise used in the Nahuatl language. My wish was to ascertain if any relationship existed between these two idioms, and to what extent. This desire was the more intense as *velica* is a term also used in the Slavonic tongue, and as in the Nahuatl are a few more expressions, like that of *metzti*, "moon," which sound very similar to some Slavonic terms. Not until I arrived in Lima was my desire fulfilled. *Velica*, which was in former times spelled *villca*, is a Spanish corruption of the term *whlica* (Germ. spell.), and signifies a fortified place; and *Whuanca* was the name of an Indian tribe; hence Whuancawhlica (Germ. spell.) signifies the stronghold of the Whuancas.

Mr. Poumaroux, in Lima, possesses an exquisite collection of Peruvian antiquities made of all kinds of material, vegetable and mineral. As he told me that Mr. Squier has taken two hundred photographic copies of the most interesting objects, I shall refrain from saying anything about them. Besides this archæological collection Mr. Poumaroux possesses likewise one of minerals, and a gallery of engravings and paintings.

From Lima I visited the Chincha Islands, on which I remained five weeks. I had there occasion to observe the condition of the Chinese cooleys digging the whuano, which was not much better than a kind of slavery. In former years their condition was still worse. When they signed the contract in China by which they were bound to perform work for a number of years at a certain amount, they did not know that they would be obliged to dig the whuano; consequently, when they had to perform this awful work under a severe treatment, they committed suicide by the dozen, jumping from the rocks of the island.

I did not increase my archæological store by any relics from the islands, for, nothing of this kind was discovered during my stay; although many such relics were found at the commencement of the exportation of this fertilizer.

During my stay on the islands, by the invitation of Captain Wherland, of the British ship Tudor, I joined a boat excursion to the bay of Paraca, that part of the bay of Pisco nearest to the promontory of Paraca. This forms the southern boundary of the whole bay. The wind blowing from that quarter, that is, from the south, is also called Paraca, *ca* in Kichua meaning "take." After having passed the extreme end of the hilly promontory we found on the slope of a hill not much less than a thousand feet high, a figure or pattern, several hundred feet long and broad, executed by trenches in the apparently stony ground. From the

middle of a square inclosed by a ditch proceeded two trenches several hundred feet in length, and ending in a sort of crown with five pinnacles, similar to the heraldic coronet of a baron. At one-third of the length of this trench above the square a single ditch extended on each side, in a horizontal direction for some distance, and then turned up towards the top of the hill, about one-third of the length of the central trench. Each of these side branches passed through a figure very much like the heart on playing-cards. The points of the hearts on the right and left converged. The upper end of each of these side branches expanded likewise into a crown similar to the coronet, but of smaller dimensions.

The land which forms the sinuosity of the bay is a sandy desert, part of which has been used by the ancients as a burial-ground. The sand is strewn with bones from the graves which have been opened, mostly with the expectation of finding valuable articles. We opened one grave, which was found by means of an iron rod. After the removal of the sand to the depth of two feet and a half, we came to the body, in a crouching posture, encircled by pieces of split bamboo. The sailors, who performed the digging, not liking such work, impatiently took hold of the head to lift the body: thus the head was broken off, and the rest remained in the grave. The head with the neck, which I possess, is perfectly desiccated by the heat of the sand. Around the neck is a twine of cotton, to which is attached in front a little square bag of cotton, like those worn by many Catholics. In the grave was also found a vessel of the calabash fruit petrified, filled with maize, the germs of most kernels being destroyed by insects. I secured also two fragments of wooden staves in the shape of long lances, which stood upright near the body. The body seemed to have been that of a woman, and the staves were such as are used in weaving. It was said that some distance from the shore are ruins of former edifices.

From this part of the bay all the inhabitants on the islands and the shipping receive the water they use. It is taken from square deep holes dug in the beach like a well, in which the sea water percolates. These wells are fenced and covered with planks. The water is not entirely sweet, but has very little of a brackish taste.

The American minister informed me on my first arrival in Lima of the death of the American consul in Guayaquil, who had the kindness to permit me to store my superfluous luggage in the garret of his house. When I came to Guayaquil from Lima I found the trunks and boxes in charge of Mr. L., the present American consul, but every trunk and box with the exception of one had been opened, and all articles of service stolen. Only the chemicals, and luckily my manuscripts, were not touched.

I left Guayaquil in a sloop which was transformed from a *balandra*, the common coasting craft, by removing the mast from the centre and placing it nearer the bow, and sailed for the Galápagos islands. We had to stop first in the harbor of Santa Elena to await the arrival of a still smaller craft, in company of which we intended to sail for the islands. While waiting for this craft I took the yellow fever, which was then raging in Guayaquil, as well as in Santa Elena and the surrounding country, and the two crafts departed without me.

After my recovery, at my first visit to the *cura*, inquiring if there were any

ancient relics in the place, he answered that none of the inhabitants of the town possessed any, and taking me down stairs to show me his garden, I perceived at once two sculptured stones standing at the wall. Of these the curate had not the slightest knowledge. The drawings I made of these two monoliths show two figures sculptured, of common sandstone, two feet high. One of these is the image of a woman half sitting, all nude except a cap fitting tightly on the head, with a prolongation behind, similar to that on a hood of India rubber, only that it was tapering near the waist, where its end was secured by a narrow band encircling the waist. The ears were sculptured on the outside of the cap. The arms were bent in the elbows and the hands met in front of the girdle. The legs below the knees were wanting. The other monolith represented a squatting figure more rudely executed, the drawing of which was more angular. The head, of which the top was flat, was inclosed by a tight cap which left the eyes, nose, cheeks, and chin uncovered, after the fashion of a nun. The ears were sculptured outside on the cap. The arms were bent in the elbows, which reached down to the waist, and the hands met in front of it. The legs were only indicated, without being executed. Both these monoliths were found in the vicinity of Colonche, a village nine leagues distant. A merchant of Santa Elena presented me with a small earthen vessel somewhat injured, and large stone beads which came likewise from the same locality.

In the arid plain near Santa Elena is an artificial reservoir constructed by the ancients by damming a brook running between two slight elevations. This brook fills the reservoir in the wet season, and ceases to flow in the dry season. The inhabitants of the town get their principal supply of water from it, and the cattle and horses which are roaming in the plain come from a great distance to slake their thirst, there being no other water within a circuit of many miles during the dry season. On this account, when the brook ceases to flow the water gets lower every day, and by the augmentation of the effluvia of the animals, almost fetid, exhibiting a green scum on its surface near the shore; and yet the inhabitants are obliged to use it, because the water in the few wells of the town is brackish. The wealthier people collect rain-water in earthen jars of a conical shape, the mouth being in the base of the cone. This water they use for drinking. I drank water thus preserved which was two years old, pure as crystal and of excellent taste.

By invitation of the *cura* I accompanied him to Colonche, where he went to celebrate the *Corpus* festival. After travelling about one-half of the distance I met with large heaps of fragments of ancient pottery, signs of former population, without being able to assign the cause for such accumulations.

On the Galápagos archipelago, which I visited afterwards, and where I remained over five months, I did not find any archæological remains. This archipelago bears no evidences of ever having been peopled. The government of Ecuador established on the island of Floriana Charles, some years ago, a penal colony, which ended miserably by the mutiny of the convicts, who murdered the officials. Afterwards an attempt was made to colonize that island, and fruit trees of various kinds were planted on it, and domesticated animals, such as cattle, hogs, etc., were intro-

duced. This attempt failed likewise, and the introduced animals were roaming on the island in a wild state. The greatest obstacle to a colonization of these islands is the want of fresh water, which is only found on two of them, and there in sparing quantity.

THE SCULPTURED STONES AT SANTA LUCIA COSUMALWHUAPA.

I now return to the description of the sculptures at Santa Lucia Cosumalwhuapa, which, as I have said, forms the most important part of this memoir. Santa Lucia is a village in the Republic of Guatemala, in the Department of Esquintla, near the base of the Volcano del Fuego, at the commencement of the inclined plane which extends from the mountain range to the coast of the Pacific Ocean. This village is of comparatively modern origin, its population having much increased of late years by immigrants from the highlands of the State, on account of the improvement in agriculture, which consists principally in cultivating cotton.

The village actually lies in the midst of an orange grove, which yields so abundantly that the fruit is given away, the only expense to the receiver being the cost for picking, which is but half a real or $6\frac{1}{4}$ cents for a hundred. The cause of this abundance is the custom of planting an orange tree by each *pater-familias* at the birth of a child.

It may be of interest to mention that the snakes, which are abundant here, are eaten by the people, while they will not eat the meat of alligators; the reverse of the habit of the people of other parts of the country, who eat the meat of alligators but not that of serpents. I was once very much amused at meeting an Indian in a *rancho*, a public shed erected for the accommodation of travellers, who invited me to share his breakfast, which consisted of the roasted meat of a howling monkey (*Mycetes seniculus*), but who would not accept from me the boiled meat of a serpent which I offered to him in exchange.

A short time before my arrival in that country the monoliths at Santa Lucia had been accidentally discovered by a man who was preparing the ground to plant cotton. In commencing to dig he came upon a pile of stones which aroused his curiosity, and by removing the earth he found a sculpture on its surface. This increased still more his curiosity. By the removal of a portion of the soil a number of those near the surface were brought to view.

When I resolved to make drawings of these sculptures I undertook no easy task; for, in order to make the drawings, I had first to remove from the slabs the dirt and moss attached to them. For effecting this I had no other implements than some husks of maize, and the water in a small pond near by. Parts of some of the slabs were still covered with earth, for the removal of which I had to use a stick as a hoe to loosen the earth, and my hands in place of a shovel. All these operations, together with the drawing, I had to perform while exposed to the rays of the sun, the heat being so intense as to produce a blister on my neck while working.

To make my drawings true copies on a reduced scale, I stretched over each slab threads six inches apart, by which the sculpture was divided into squares of six inches. My field-book for topographical surveys was ruled in squares of half an

inch each; in this I made the drawings, reducing each square of six inches of the original to one square of the field-book. My drawings, therefore, are all one-twelfth of the originals.

The sculptured slabs are in the vicinity of the village. The greater number of them, of which I have made drawings, form an extended heap, rendering it probable that there are others hidden from view which more extended researches would reveal.

The other slabs are only a few rods distant, interred in such a manner as to present to view nothing but the sculptured surfaces. Besides the above there are two sculptures in the village, one in the yard of the rectory, and the other forming the door-step to the private residence of Don Pedro Anda, the discoverer of these monoliths.

The heaping up of these stones caused the fracture of some of them, and the concealment of the sculptures on others.

On the *hacienda* "Los Tarros," about three miles from this heap of relics, are also some sculptures of a high degree of perfection. It is not impossible that at one time both collections may have formed parts of the ornaments of a large city, as I visited in the republic of San Salvador the ruins of a city three miles in extent. The remains of the front wall of a church are to be seen between the two places above mentioned. From whence came its materials? Who built it? There is no record whatever of the existence of a city of such magnitude as would seem to be indicated by the presence of the sculptured stones save the monuments themselves.

At the time of the discovery and occupancy of Central America nothing was known in regard to such a city; but this need not be surprising if we consider that there is no record of the existence of a much more recent settlement on the same spot, or of four other communities of Christian origin within a very limited area in the same vicinity; the name, nay even the official records, fail to indicate their former existence, and all five of them are only recognizable now by the ruins of their churches.

All the sculptures, with the exception of three statues, are in low relief, nearly all being in cavo-relievo, that is, surrounded by a raised border, the height of which indicates the elevation of the relief. The same kind of relief was practised by the ancient Assyrians and Egyptians.

In seven instances the sculpture represents a person adoring a deity of a different theological conception in each case. One of these seems to represent the sun, another the moon, while it is impossible to define their character in the remaining five. All these deities are represented by a human figure, of which only the head, arms, and breast are correctly portrayed, proving that the religious conceptions had risen to Anthropomorphism, while the idols of the nations of Central America and Mexico which have previously come to our knowledge are represented by disfigured human forms or grotesque images.

Four of the other sculptures represent allegorical subjects; two of them the myth of the Griffin, the bird of the sun.

The slabs on which the low reliefs are sculptured came from the Volcano of Acatenango, and are of various sizes; the greater number of these, like those

representing the deities, are twelve feet in length, three feet in width, and two feet in thickness. Nine feet of the upper part of these stones are occupied by the sculptures, while the lower three feet appear to have served as a base.

Considering that tools of iron were unknown to the makers of these sculptures, and that they had at their disposal only such implements as stone and perhaps bronze could furnish, it seems wonderful that such works of art as these monoliths could have been produced.

When I arrived one morning to continue my drawings, I found two stone-cutters chiselling at one of the sculptures, with the object of dividing it into parts. To my question: how they dared to touch such valuable objects? they answered that they were obeying the orders of the justice of the peace, who wanted the stones for the construction of a fountain. I ordered the men away, intimating that I would settle the case with the justice. They obeyed, and I went to the justice, a Frenchman, to explain to him that it was a sacrilegious act to cut the sculptures to pieces, even if it were done with the intention of preserving them, as his view of it was. At the same time I leased the ground for two years, the longest term allowed by law, as I could not purchase it, the community reserving the right of ownership to all the land within their jurisdiction. By this act I prevented the possibility of the sculptures being disturbed by any one during my lease, which could be renewed at its expiration.

Sculpture Number I, Plate I.

This sculpture is of porphyritic rock, originally twelve feet long, three feet wide, and two feet thick. Three feet of the lower portion apparently served as a base to be buried in the ground. The stone is broken into two nearly equal parts, and a few small fragments have been chipped from the sides. The design represents in low relief an erect human figure in profile, with the head and shoulders slightly inclined forward. The body is apparently naked, excepting those portions which are concealed by elaborate ornaments, the most prominent of which is a crab covering the head. Since there is every reason to believe the figure to represent a priest, the crab may be taken as the emblem of priestly rank. This is, as far as I know, the only instance in which the crab has been used as a symbol of rank of any kind.

The portion of the hair nearest the back of the head appears to be braided and interwoven at nearly equal distances with ring-shaped ornaments, while below the shoulder-blade strips of cloth are variously interwoven with an ornament resembling a sheathed scimitar, the cue ending in an ornament somewhat in the shape of a scythe, and reaching to the ankle. In the lobe of the ear is a small ring, to which one about three times as large is suspended. To a band around the neck is attached a rosette with a tassel in the centre. Around the waist is a stiff, broad, and projecting girdle, of which the head of an animal forms the back part. From its lower edge, in front, hangs a serpent, tied in a bow-knot. To the same point is joined a scaly band, which surrounds the thighs. To the left foot is attached a sole, fastened by two strings around the instep, the whole foot being covered except the toes. Below the right knee is a kind of garter with a pear-shaped pendant in front. The right

foot is bare. The relief of the left knee is broken off. The right hand, without any ornaments, holds a tongue-shaped sharp-pointed instrument, undoubtedly a knife, while the left hand, a little above the wrist, is ornamented by a bracelet of several rows of small square stones, and holds the head of an immolated body upon which the priest is standing.

This severed head, from the ear of which hangs a circular disk with a pendant, and from the back of which two serpents depend, is remarkable for the presence of a beard and for its features, which are entirely different from those of the priest.

From the sacrificial knife in the hand of the priest rises a staff in the shape of an inverted S, to one side of which five small nodes are attached, in three divisions, of two, two, and one; while the other side has only two such nodes.

From the trunk of the immolated victim emanates a similar staff, but differently bent, and with only six small nodes arranged in a somewhat different manner from those of the other staff.

From the evidences of other sculptures we are entitled to suppose that these staves were intended to represent the speech of both the priest and the victim.

In the lower part of the sculpture are represented two attendants of the priest, each carrying a severed head. One of these attendants is represented as "death," having a skull in place of a head. His neck is surrounded by a double collar, the lower edge being ruffled, the upper scalloped, and by a ribbon tied in front in a knot with diverging ends. The head of the other attendant, whose straight hair is moderately short, only reaching to the shoulder, is covered by a kind of cap, shaped somewhat like a modern fur cap, and has a plume in front. The ear is ornamented by a disk with a small boss in the centre, and the breast by a ribbon tied in a knot. Around the waist appears to be a scarf tied in a bow-knot, having a kind of apron attached to it reaching below the knee. The legs and feet are bare, and are ornamented above the ankles by bows similar to those on the breast of each of the attendants. Both the heads in the hands of the attendants apparently belong to a race different from that of the officiating priest. The one in the hands of death resembles the one in the hands of the priest, while the other is beardless and exhibits a strangely-shaped forehead.

Sculpture Number II, Plate I.

This is a porphyritic (*vulcanite*) block, twelve feet long, three feet wide, and two feet thick, of which the upper sculptured part, nine feet high, is surrounded by a rim about two inches in width at the top and the two sides, and six inches wide at the bottom, indicating the original surface of the block on which the reliefs have been carved. The upper half of the sculpture represents the head, arms, and part of the breast of a deity, apparently a personage of advanced age, as indicated by the wrinkles in the face. The right arm is bent at the elbow, the finger-tips of the outstretched hand apparently touching the region of the heart; the left upper arm is drawn up, the elbow being almost as high as the shoulder, and the forearm and hand hanging at nearly right angles. The forehead is surrounded by an apparently ruffled band, and the smooth hair hangs down on the sides of the head in two ornamental braids. From the lobe of each ear hangs a

circular disk with an elevated small boss in the centre, to which tasselled pendants are attached. The right wrist is adorned by a double bracelet, apparently of a textile material. The left wrist is covered by a spiral ornament. From the head and neck issue winding staves, to which not only knots or nodes are attached, but also variously-shaped leaves, buds, flowers, and fruits: apparently these are symbols of speech, replacing our letters, and expressing the mandate of the deity.

As to the theological principle symbolized by this deity I do not venture to express an opinion, for want of characteristic attributes; it is only by deciphering the mandate represented by the winding staves above mentioned that we can arrive at a positive knowledge of his true character. The only intelligible signs are the wrinkles in the face, indicating an advanced age in the deity, and consequently he might be supposed to represent sentiments only peculiar to old age.

The lower part of the sculpture represents an erect human figure with the face turned up toward the deity imploringly, and from the mouth emanates a staff with nodes variously arranged. The appeal is still further intensified by the raising of the right hand and arm. A human head partly covers the head of the figure, from which hang variously-shaped ribbons, terminating in the body and tail of a fish. From the lobe of the ear depends a large ring; around the neck is a kind of cravat; at its termination, on the breast, is a circular gorget with a tassel. Above the right wrist is a double bracelet, apparently formed of small square stones; the left hand is covered, gauntlet-like, by a human skull, and the wrist is ornamented by a double scaly bracelet. The waist is encircled by a stiff projecting girdle, which differs from the general style of this ornament by having attached to it on the side a human head, with another human head suspended from it. One of these heads, and the ornaments of the other, are somewhat effaced on account of the erosion of the stone. From the front of the girdle emanate four lines, which ascend towards the deity, uniting at the top. They seem to symbolize the emotions of the person, not expressed by words. From the lower edge of the girdle, in front, hangs a ribbon tied in a profuse bow with pendent ends. The right leg is adorned below the knee with a garter and a pear-shaped pendant. The right foot is provided with a kind of shoe, without, however, offering any cover to the toes, while the left foot is covered entirely by a shoe of different construction. From behind the image issue flames.

Sculpture Number III, Plate II.

This is a block of the same dimensions as the previous one. Although the encircling border is wanting, the carved portion is nine feet and a half in length, just as in the other slabs. The sculpture of the uppermost third likewise represents a deity. Though as in the slab last described the head and upper part of the breast are those of a human form, the hands are provided with claws, indicating ferocity, which is furthermore corroborated by the position of the arms and the erect hair. The head is covered by a square cap with three arches arising from it. The lobes of the ears are ornamented with small circular disks. Encircling the neck is a necklace formed of small balls, to each of which is attached a pear-shaped pendant.

The breast is covered by a large circle with diverging flames emanating from it—the emblem of the sun—and the entire figure is enveloped in flames.

Judging from the attributes represented, such as the enveloping flames and the image of the sun adorning its breast, we are justly entitled to the supposition that this sculpture was intended to represent the sun as a deity; but not as a benefactor, in his benign influence on life, but rather in his tropical fierceness.

In the lower part of the sculpture are seen two persons, of which the most conspicuous is the image of death, represented by a skeleton, which is more complete than the one in figure No. I. The head is formed by a skull, the bones of which, like those of the rest of the body, are rudely figured. The lower jaw especially seems to be composed of a number of bones, yet the design is sufficiently characteristic not to admit of any doubt as to the meaning of this part of the sculpture. Nevertheless, the skull is covered by a suit of wavy hair, from which descends something resembling a horn. From the ear proper, and passing under the chin, extends a scaly strap, while from the lobe hangs a twisted ring with a pendant. Both the upper and lower part of the arms and legs are represented as bony, while the hands and feet are fleshy. The right arm is raised, the first finger and thumb pointing toward the deity; the clenched left hand hangs by the side. The vertebræ and ribs are indicated, though in a reduced number, reaching to the breast bone, below which the enlarged stomach is encircled by a stiff girdle, similar to those observed on the figures previously described. From the back a twisted band descends to the thigh and then curves up again to the front, ending in a bow-knot with two ends. Another band, reaching to the thigh, appears to be part of some ornament of the skull. From the open mouth of the upturned skull the tongue is protruded, and a staff, indicating speech, issues forth, differing, however, in form, from those previously described, by being bent angularly. The nodes attached to it are not circular, but semicircular, deviating thus from the illustration of speech previously described, and showing its ghostly origin. The staff emanates from the mouth, and is apparently directed to the ear of the other person, who, seemingly frightened thereby, appeals to the deity for relief with outstretched arm and upturned face. The anguish of this appeal is not expressed by a staff, but by two wavy bands. (Note Catherwood.)

The head is covered by a ruffled bonnet ornamented with a ribbon tied in a knot with two ends, and fastened by a band passing under the chin. The profuse hair surrounds the head in loose curls, some of which cover the upper part of the breast. From the bonnet descends a band which divides at the knee into several strands, each of which terminates in a globe. Another band, the end of which is fringed, reaches down below the knee. From the lobe of the ear hangs a large plain ring. The right wrist is covered by a bracelet, apparently of textile fabric, while the left hand is covered by a skull. The usual stiff girdle with the animal head on the back of it, is again met with, and from the front descend sashes surrounding the thighs, three of which, of fine texture, emanate from the same point. Below the right knee is to be seen a garland in place of a garter. The remaining portion of the legs and the feet are bare.

Between the deity and the suppliant is seen a small altar, upon which rests a

human head, undoubtedly as an offering to the sun. This head, again, is remarkable for the presence of a beard, and for a protruding nose and forehead, indicating that the victim was of a race different from that of the suppliant. The heads of two animals, each surrounded by a circle, represent hieroglyphics.

Sculpture Number IV, Plate II.

This is a block of dark gray porphyry (*vulcanite*), twelve feet long, three feet broad, and two feet thick, the upper left corner of which is slightly broken off. The sculpture occupies nine feet of its upper part. The upper portion represents the head and breast of a female surrounded by a circle, from which the arms project. Besides the stereotyped frill surrounding the forehead, the only ornament of the head consists of two entwined rattlesnakes. The hair is of medium length, and descends in tresses to the shoulders and breast. The ear is ornamented with circular disks inclosing smaller ones. Around the neck is a broad necklace of irregularly-shaped stones of extraordinary size. Below the necklace the breast is covered with a kind of scarf of textile fabric, the upper ends of which are fastened by buttons. To the centre of this scarf seems to be attached a globe, the upper part of which is adorned by a knotted band from which four others ascend. From the lower part of the globe descends another band with incisions characteristic of Mexican sculpture, while its sides are adorned by wreath-like wings. The wrists of both hands are covered with strings of large stones perforated in the centre. From the semicircular bands emanate two of the twining staves; to the staves are attached knots, leaves, flowers, and various other emblems of a mythical character. The most conspicuous of these is the representation of a human face in a circle resembling the ordinary pictures of the full moon. The two central staves, originating from the neck, pass downward, and are differently ornamented. The fact that the head and part of the breast are surrounded by a circle, and that the image of the moon forms one of its ornaments, induces us to believe that this is the figure of the moon goddess. In the lower part of the sculpture appears again an individual imploring the deity with face upturned and elevated hand. The supplication is indicated by a curved staff knotted on the sides. Excepting a circular disk attached to the hair, the head is without ornament; the long hair hangs down to the breast and back, ending in a complicated ornament extending below the knees. In the lobe of the ear is a small ring from which a larger one depends. The breast is adorned with a globe similar to that on the breast of the goddess, only it is smaller. Around the wrist of the right hand is a plain cuff, while the left hand is covered by a skull; a stiff girdle with a boar's head ornamenting its back part surrounds the waist. This girdle differs from the previous ones by being ornamented with circular depressions. From the front of the girdle descend two twisted cords surrounding the thigh, and a band tied in bow and ends. Below the right knee is a kind of garter with a pear-shaped pendant. The left foot, with the exception of the toes, is inclosed in a sort of shoe.

In front of the adorer is a small altar, the cover of which has incisions similar to those in the pendant of the globe on the breast of the deity. On the altar is a

human head, from the mouth of which issues a curved staff, while other staves in the shape of arrows appear on the side of the head.

Sculpture Number V, Plate III.

The broader side of a dark gray porphyritic block of the same dimensions as the previous one, is sculptured on nine feet of its upper part. The sculpture is bordered by a rim which on the top and two sides is about two and one-tenth inches wide, while its width at the base is six inches. A small portion of the block from the left upper corner almost to the right is broken; there are also two small erasures on the surface.

Again we see on this slab the head, chest, and arms of a deity represented, beneath which is a person adoring. The forehead of the deity is surrounded by the stereotyped frill. The sole ornaments of the head consist of staves winding in various directions, the bearers of the deity's mandates expressed in cipher language. Between the upper lip and the nose is an ornament, the only instance of its occurrence excepting upon the human skull forming the gauntlet of the person in sculpture No. 4. From the ears depend large rings. The hair hangs down in a braid on either side of the head. A single row of small circular disks with elevations in the centre adorns the neck. The breast is ornamented by two twisted ribbons. Both wrists are covered by bracelets consisting of four rows of quadrangular stones. From the neck emanate two staves bearing nodes, buds, and other unknown figures. Attention is especially called to the disposition of the two staves arising from the top of the head. After curving outward for a short distance they are connected by an arched ridge, upon which as a base a triangle is erected; and in the centre of the inclosed space are two mysterious emblems. The ridge forming the central triangle is prolonged so as to divide the entire upper part of the stone into five triangular spaces, which are embellished by the leaves, buds, and other ornaments on the winding staves. These three triangles seem to be the mystic signs for a religious expression, which we find represented in various places, as on the helmet of the adoring person, and also in other sculptures. On the left shoulder of the deity is a sheaf of the leaves of the maize. From the last-named emblem we may take this figure as the representation of the "god of fertility." The head of the person standing beneath, with face upturned, is ornamented with a frill and a kind of helmet from which the above-mentioned lobes ascend. The stone is somewhat eroded, which defaces the forehead, nose, chin, and cheek of the figure. To the top of this helmet is attached a large tuft of plumes. The loose hair to which the skin of an animal and other ornaments are attached, floats down the back. From the lobe of the ear is suspended a large ring, and a single row of spherical beads forms the ornament of the neck and breast. The right wrist is ornamented with a similar bracelet to that of the deity, while the skull of a wild animal serves as a gauntlet to the right hand. This seems to indicate that not only human beings, but animals were offered in sacrifice to the gods. The waist is encircled by a stiff girdle, on the back of which again appears the head of a wild animal, and on the fore part are oblique perforations. To the lower part of this girdle is attached a broad textile band divided into two

parts surrounding the thigh, and another band tied in a bow-knot. From the waist ascend curved lines, seemingly to indicate the feelings of the individual, not by language, but by aspirations. Here again the right leg below the knee is encircled by a garter with the pyriform pendant. The bottom of the right foot is protected by a thick sole, from which ascends to the instep a flap fastened by a ribbon tied in a knot. From the heel a part of the sole arises to the height of the ankle, where it is fastened by three bands. The left foot is encased in a kind of shoe, forming a shield-like covering for the instep, and tied in a similar manner to the one on the right foot. Behind the right leg leans a short spear-like weapon with a cross piece like the handle of a spade. From the mouth ascends a winding staff with nodes on its sides, one of which is crescent-shaped, and differs from all those heretofore described. As in the other instances mentioned, these nodes attached to the winding staff express in cipher the prayer of the individual.

Sculpture Number VI, Plate III.

This block, twelve feet long, three feet broad, and two feet thick, is broken in two parts, the upper of which is five feet long, and the lower seven feet. The fracture presents in both portions a clear cut surface without any loss. The sculpture of the upper portion has been slightly abraded; little more than half of the upper part is visible, the rest being hidden from view by other sculptured stones overlying it. The upper nine feet of the block, as usual, is surrounded by a rim, which is two inches wide on the top and at the sides, and six inches wide at the bottom. The subject of this slab is the adoration of a deity by a person of high standing. Only the head, breast, and arms of the god are given. The face is fleshy. In the eyes the iris is indicated, the only instance of its occurrence in all the sculptures. Besides the frill around the forehead, the head is ornamented by two serpents and several of the speech staves. The ears are ornamented by circular disks, to which smaller ones are attached. The short hair hangs down in a braid behind each ear. Serpents tied in front in a knot, with several stones, form a kind of brooch, suspended from a narrow ruffled collar. On either side of the neck descends a winding staff adorned with emblems. The two hands hold in front of the breast a globe similar in all respects to that described in No. 4. The shoulders, breast, and arms, but not the head, are enveloped in flames. The winding speech emblems, arising from the head, differ from those hitherto described by having a furrow running along the central part. Among the emblems are seen flowers, not only singly, but also in clusters. The head of the adorer is obliterated, excepting the outlines of the face. From the upturned mouth rises a staff with one curve, to the sides of which are attached six nodes in three groups. To the hood which adorns the head are attached three rows of square pieces, forming a kind of cape, and from the top descends a tuft of ribbons. From the ear depends a large ring, in front of and behind which the hair falls in locks. The rest of the hair is profusely adorned, different forms and materials being used in the ornamentation. One of these is a wreath of ribbons, while the end of another has the shape of a sheathed scimitar. The hair ends in the decorated head of an animal, having short horns like those of a bull, so that if we did not know that

the aborigines of America had no cattle, we should be obliged to take it for the representation of a bull's head. From the head descends a short body, narrower than the head itself, and shaped like the tail of a fish at its extremity. On the breast is a brooch in the form of a rosette, in the centre of which is a stone surrounded by others. From this brooch a ribbon extends with small objects attached to the edges. The wrist of the right hand is covered by two rows of ruffles, while the upraised left hand is inclosed in a kind of gauntlet made of a human skull. The waist is surrounded by a stiff girdle, the back part of which contains a human skull, and the fore part two oblique openings. From the centre of the lower edge in front descends a double band, tied in a bow-knot with drooping ends. From the waist ascend four faint serpentine lines dividing at the top into two ends, the expression of breath or a speech without words, reminding us of the "speaking girdle" of the ancient Hebrews. Unquestionably it seems to indicate an auxiliary to the prayers emanating from the mouth. Both the knees are covered with scales, which would indicate that the legs were clothed, it being impossible to interpret the scales otherwise. The right leg is adorned below the knee with a garter, to which is attached a pyriform pendant. On both feet are shoes of peculiar pattern; that of the right foot leaves the three smaller toes bare, while the left shoe surrounds the foot in the shape of a bandage.

Sculpture Number VII, Plate IV.

This is a large fragment, five feet five inches long, apparently broken from a slab twelve feet in length and two feet nine inches in breadth. The missing part is either lost, or more likely covered by the heap of sculptures and thus rendered inaccessible. The sides and the top of the sculpture are surrounded by a rim of the usual width. The sculpture represents a deity inclosed in a shrine variously embellished. The most conspicuous among the ornaments are huge tusks curved upward and downward. I would not venture to explain the meaning of these ornaments, but feel assured that they do not represent flames, since we have seen them differently represented in the previous sculptures. The interpretation of the other ornaments I have likewise to leave to others more versed in this art than I claim to be. I would only venture to say that the triangle forming the apex of the shrine might be the symbol of eternity. Only the head, arms, and breast of the deity are present, as in the sculpture before described. The head-dress surrounds the forehead in the usual manner, while a diadem constructed of circular disks encircles the head. From the centre of the foremost disk hang three pendants. The hair is smooth on the top of the head and descends in tresses behind the shoulders. Behind each ear, ornamented by a circular disk, descends a short band to the neck. Three rows of beads surround the neck and fall upon the upper part of the breast. The arms are folded, and the wrist is encircled by a bracelet composed of small square stones. From the breast descends, on either side, a short winding staff on which leaves, a bud, flowers, and fruit are growing. The attributes adorning the shrine and other characteristics are not sufficiently familiar to enable one to define the nature of this deity.

The rest of the sculpture on this fragment, much effaced, represents the head and face of a person from whose mouth arises a curved staff with eight nodes on its sides, by which the prayer is expressed. A portion of a crab covering the head indicates the sacerdotal rank of the suppliant.

Sculpture Number VIII, Plate IV.

Only four feet and a half of this sculpture are visible, being the upper part of a porphyritic block of the usual size. The invisible portion is covered by superincumbent blocks. The sculpture is bordered by a rim, which on the top and sides is two inches wide, and at the base four inches. From the similarity of the posture of the person represented to that of those previously described, one is induced to believe this to be a man in the act of adoration or prayer. The head is covered by a cap trimmed with ruffles in front and surmounted by a human head, from the top of which floats a long plume similar to that of the "Guesal" (*Pharomacrus micinno*), the royal bird of the aborigines. From the back of the head descends a broad band ornamented with rosettes protecting the neck. Gorgeous ornaments, consisting of a bow and ends of ribbon, and a braid terminating in an object shaped like a scimitar, and an eagle with outstretched wings, reach to the ankles and form the lowest part of the band. A large ring hangs from the ear, and a chain composed of square links, from which depends a small cross, adorns the neck. A bracelet striated lengthwise adorns the wrist. Around the waist is a stiff girdle, the back part of which is formed of the woolly head of a fierce animal, while in front are the oblong openings. To the girdle is attached a covering of the thighs which greatly resembles a pair of short trowsers, and a band tied in a bow-knot falls in front. The significant lines expressing feelings, or language without words, ascend from the waist. The right leg below the knee has a garter with a pyriform pendant. The right ankle and heel are encircled by bands. Around the left ankle is fastened a square shield protecting the upper portion of the foot.

Sculpture Number IX, Plate IV.

This is a fragment of a block whose original length must have been nine feet. The two upper corners and part of the base are broken off. Its width is four feet. The sculpture represents a person of rank, if not the chief of the nation, sitting on a seat, which, being ornamented in an elaborate manner, might be called a throne. On the head is a complex headdress consisting of four portions, adorned with bows from which float numerous bands, some of which uniting form a broad tuft behind. From the hair descend bands, some of which end in curls, while the rest, reaching to the ground, form tresses: to these bands is attached a curved ornament resembling a scimitar. A large ring is suspended from the ear, and some curls of the hair cover the shoulder. Around the neck is a collar, to the front of which is attached a circular disk with a pendant. The chest seems to be covered by several rows of bands. The arms likewise appear to be clothed with a kind of jacket with a broad cuff, adorned with buttons on the left sleeve, while the right sleeve terminates in something resembling a bracelet. The right hand clasps an instrument shaped like an oar, which might be a weapon or an emblem of authority.

The left hand touches the seat, as if to rest on it. The legs appear to be clothed down below the knee, where the right thigh is encircled by a band, to which a row of pyriform pendants are suspended. The feet, excepting the toes, are covered by a kind of shoe. The heel rests on a footstool ornamented with square openings, from which arise two supports representing the feet of the throne, on which rests the horizontal seat. From the seat rises a somewhat concealed support to the arm of the throne, the projecting end of which is ornamented by the grotesque head of an animal with open jaws provided with teeth and fangs, out of which the tongue protrudes. From the back of the arm descends another support seeming to rest on clouds. Behind this support is an ornament in the shape of a circle with an opening on its upper side. From this ornament the arm turns around, forming the back of the throne. This monolith is some rods distant from the heap, and nearly buried in the ground in an oblique position, consequently only a part of it was visible. From the remaining portion the earth had to be removed by loosening it with a stick and throwing it out with the hands.

Sculpture Number X, Plate V.

At a distance of some rods from the heap formed by most of the monoliths lies this stone, presenting only the sculptured surface, on which account its thickness cannot be ascertained. It seems to have been nine and a half feet in length and four feet nine inches wide, though it is more likely that its width was greater, as large pieces of it are broken off, and the design would require a greater space for its completion than the missing fragments could supply. It might not be wrong to suppose that this stone is but one of a series of which this sculpture is but a part, as neither the persons represented nor their ornaments and hieroglyphics are fully executed.

From atmospheric influences and its position in the ground the surface of the stone has been greatly defaced in some places, by which the sculpture has suffered. It had to be cleaned, and the moss and dirt removed, before a drawing could be made. The principal subject of the sculpture is a scene in which two persons are conversing with each other, one standing erect and the other in an inclined position. The serpents indicated have apparently formed the headdress of the erect individual, from which might be conjectured his priestly office. The corrosions of the stone partially obliterate the lower part of the face, and also the ornaments of the ear and head, and only the gorgeous appendages of the hair are distinctly visible. These are formed as in most instances of bands, twisted in braids embellished with circular disks and ornaments of various shapes. The transverse bar or hilt with rounded ends is again noticeable; but the pendant descending from it, which in other sculptures is bent and imitates a sheathed scimitar, is in this case straight. This gorgeous ornament terminates in the lower extremity in a fish, the fins of which spread out in the shape of a fan. The left hand is inclosed in a gauntlet formed of a human skull, and is directed towards the other person, which would signify the authority of its owner. The waist is again surrounded by a stiff girdle ornamented in the back by a deer's head somewhat effaced. From its lower portion float many bands, forming a kind of skirt. There is no language represented

as coming from the mouth, but the gesture of the hand takes its place. The head of the other person is surmounted by a cap, the form of which reminds one of those worn by the European nobility. A galloon descends from its side and a tuft of five plumes arises from the top. A frill surrounds the forehead, and one of larger proportions the neck. From the mouth ascends a staff which is bent in four curves, to the sides of which are attached eight simple nodes, besides one of a trefoil shape. The ear is adorned with a circular disk with a long pendant descending from it. By the erosions of the stone the ornaments of the hair are effaced, but those that remain indicate how voluptuous they were. The drooping right hand is covered in the usual way by a gauntlet of a human skull. The bare left hand crossed over the breast would signify the submissive sentiment of the individual. A stiff girdle with an animal's head on the back, parts of which are effaced, surrounds the waist, and from it descends a fringed band around the thighs. Between these two individuals are four hieroglyphics, of which the two middle ones are greatly effaced. The uppermost of them is a globe, from which ascend three cones. The lowest is a human head with exaggerated features, and with a bird-like bill. Each of these hieroglyphics is bounded by a circle. Two segments of similar circles, of which the centre is effaced, indicate the existence of two hieroglyphics, the complementary parts of which were undoubtedly sculptured on an adjacent stone.

Sculpture Number XI, Plate V.

This stone is likewise buried in a similar manner to No. X., and in its vicinity. The area of its visible surface is seven feet in length and three and a half feet in width. It had also to be cleaned so that the sculptures could be seen, which, greatly to my regret, was much effaced. It has the appearance of forming one of a series of sculptures, as some of the carving on it is only part of a design, of which the main portion was represented on other stones.

In the middle of the surface is a vertical row of three hieroglyphics, each consisting of a circle including a ring from which ascend three conical projections. These hieroglyphics seem to be attached to a winding staff similar to those we have seen expressing the mandates of the deity, only of larger dimensions. We see on it likewise leaves, buds, and a flower. Above this staff is a loop with three globes pendent from it, being most likely a branch of the staff mentioned above. Below this is a tuft of plumes, with three ascending serpentine leaves in front, similar to those which in other sculptures represent the speech without words. On the left side of the stone is another vertical row of rings, with part of a fourth. The two uppermost inclose a sculpture, resembling a hat with two brims, one above the other, while the third resembles a nightcap. On a level with the uppermost of these hieroglyphics, closely adjoining it, are the rudiments of another, of which the remainder is cut short by the edge of the stone. Only the circular portion of this hieroglyphic is distinctly visible, while the interior ornament is only half exhibited; although, the remaining lines indicate its similarity to the adjacent one.

Sculpture No. XII, Plate V.

This is a large fragment of a stone, four and a half feet by five, and is likewise buried in the vicinity of the preceding ones; the sides are mutilated. On the visible surface there is nothing but three hieroglyphics discernible on the left side of the base. It is hard to say whether the remainder of the surface has been sculptured or not, but it may reasonably be supposed that it was. These hieroglyphics consist of three rings, each of which incloses the head of a fierce animal, as indicated by the teeth. They are not all alike, each one differing from the others slightly in form and position.

Sculpture No. XIII, Plate VI.

At the side of the heap containing the majority of the sculptures stands this monolith, undoubtedly having been a part of the series. It is five feet five inches long, and two feet ten inches broad. On it is a person in a reclining position, with a single band tied around his forehead, forming a knot with two pendent tassels. From his temple rises an ornament resembling the wing of a bird. Besides these, the head has no other ornament. The emaciated face, as well as the recumbent position of the body, indicates a state of sickness. The hair, which is plain in front and on the top of the head, is interwoven behind with many ribbons forming loops, which are bound together by a clasp, and then spread out in the shape of a fan. The ear is ornamented with a circular disk, to the centre of which are attached a plume and a twisted ornament, similar to a queue. On the breast is a kind of brooch, which is hollow like a shell, and in which are imbedded seven pearls. The wrists of both hands are without bracelets, a single line only denoting the separation of the hand from the arm; this line would almost lead to the supposition that the arms are covered by a knitted garment, fitting tightly to the form. Around the waist are three rows of a twisted fabric, which is knotted in front in a bow, the ends descending between the thighs. Another band, of a different texture, stretches out horizontally from the region of the above-mentioned knot. Attached to this girdle is another fabric, of a scaly texture, which surrounds the thighs. The body seems to rest on a cushion. The right leg, below the knee —which in other instances we have seen adorned by a band with a pyriform pendant—is encircled with a ribbon and a rosette. This would seem to be the undress substitute for the band and pendant, while the other is worn on official or festive occasions. In front of the recumbent person stands the representation of a skeleton, quite well executed. Although the bones of the head, especially the upper jaw and frontal bones, are not anatomically correct, yet they show that the people who produced these sculptures possessed some knowledge of anatomy, for they indicate quite plainly that the upper arm and thigh consist each of one bone, while two bones form the forearm and the leg. Other points noticeable about this skeleton are the hair on the head, and the fact that its hands are fleshy, and the fingers and toes have nails. Like all representations by these sculptures, the skeleton is also embellished with ornaments.

From the back of the head emanate two objects, similar to horns, which, if they

were not differently ribbed, might represent flames. The ear is ornamented with a circular disk, with a pendant from its centre. A double ruffled collar surrounds the neck, and a serpent encircles the loins. Both the shoulders and arms are enveloped in flames. From the mouth emanates a bent staff, touching the first of a row of ten circles. Beneath the second and third circles are five bars, three of which are horizontal. The lowest one is the longest, while the two upper ones are shorter, and of different lengths. On the uppermost of these bars rest two others, crossing each other obliquely, and touching with their upper ends two of the aforesaid circles. From the last of these circles descend serpentine lines, which touch the ground behind the recumbent person.

To judge by the analogy of other sculptures, one must take the staff emanating from the mouth of the skeleton, together with the circles and bars which are connected with it, to represent speech. The descending lines may signify either the breath necessary for pronouncing the speech, or the sound it makes. Both the circles and bars differ entirely from these knots and emblems, representing speech in the other reliefs, and one is inclined to take them for the signs of numerals. One might take the lowest bar for 1, while the shorter ones indicate fractions; the two cross bars undoubtedly signify a number of units, perhaps not more than two. Each circle indicates the system of numeration used by the sculptors.

Sculpture No. XIV, Plate VI.

This monolith, five feet one inch long and three feet broad, is standing likewise on one edge. The base of the sculpture is bounded by a rim eight inches wide. Here, again, is a recumbent figure, whose head is covered by a kind of turban, and the forehead surmounted by a frill. A tuft of long plumes floats from the top of the turban. The fact that these plumes have three eyes each, leads one to suppose them to be artificial. A broad ring with a pendant adorns the ear. The most noticeable part of the face is the beard on the chin, which was not observed on any other occasion, except on the heads of immolated victims. It would lead to the supposition that the inhabitants of Central America were sparingly bearded, and that only by the constant removal of the outgrowth, they appear beardless; consequently, the existence of this beard and the reclining posture would indicate the ill-health of the individual, by which he had been prevented from plucking out the growing hairs. The symmetry of the head and face is remarkable. The high forehead, the slightly bent nose, render the features quite handsome, even according to our conception of beauty. The drawing does not really give a true representation of the beauty of the original.

A bow-knot with two ends, from which descends a tuft of ribbons, adorns the breast. A similar tuft covers the left shoulder in the manner of an epaulet. On the wrists are cuffs, very much resembling embroidered lace. A single band surrounds the waist, and, being tied with a bow and knot in front, descends in two ends of unequal breadth, the narrower one between the thighs. In front of this recumbent person stands an allegorical figure. The head is that of a deer. The body is apparently inclosed in a jacket extending to the thighs. To the back part of the body is an appendage like a deer's tail.

The right hand is inclosed in a human skull, the left in a deer's hoof. Both feet are covered by a kind of shoe; the toes resemble the hoofs of a deer. From the mouth emanates something like a bent leaf of maize, the symbol of speech. Between these figures are five circles with three bars of unequal length, which are supposed to be the signs of numerals. The recumbent position and the growth of beard as before mentioned indicate the ill health of the individual, while the other figure represents allegorically the mask of a medicine man who came to prescribe for the invalid.

Sculpture Number XV, Plate VIII.

This sculptured stone is of the same porphyritic material as the others. It is four feet ten inches long, and two feet two inches broad. It was first found in the large heap of sculptures, but has been carried away to the dwelling of the individual who discovered them and is now used for a doorstep.

We have here represented a person stepping on the first round of a ladder with one foot, and holding by both hands to other rounds as though in the act of climbing. Above the frill over the forehead the head is covered by a hat similar to the paper cocked hats made by boys. On the top is a cockade. From beneath the hat the hair floats down to the shoulder. A pyriform ornament is suspended from the ear, and a circular disk ornaments the breast. The hands and feet are bare. The waist is surrounded by three bands, a kind of girdle with a skull on the back. Below the girdle is a sash with a bunch of tassels behind. Two bands descend from the sash surrounding the thighs, and another hangs down in front. The left foot is resting on the first round of the ladder, and the right is treading on a circle with wide radii. From this circle a plant grows upward, on the stem of which are buds of different degrees of maturity, while on the top of the stem is an open flower. In the centre of the flower is a portion of a human skeleton, the skull of which is covered with hair like a wig and has the jaws open. The ear is adorned with a circular disk, having two long pendants from its centre. On the bony arm is a fleshy hand. This figure rests on the upper ends of the ladder, which is constructed of two posts to which cross-pieces forming the steps are tied by withes. This is the more remarkable since the present inhabitants of Guatemala do not possess ladders, but in lieu thereof use notched posts. At the bottom of the sculpture are two circles from which ascends a row of seven others exactly similar, which probably are numeral signs. The sculpture is bounded at the base by a rim six inches wide.

Sculpture Number XVI, Plate VII.

At a distance of a few rods from the heap of sculptures, and in the vicinity of other buried stones, one of somewhat irregular shape was found. Its length is eight feet six inches, its breadth at the base six feet, but at the top it is only five feet six inches, because parts of the stone have been broken off. On the upper surface is a huge bird with outstretched wings and distended bill; the head has a fleshy crest (partly effaced) and a similar lobe on either side of the eye. From the ear hangs a circular ring. A band surrounds the neck tied on the back in a bow-

knot having long ends. To this band is suspended an image of the sun, consisting of a circular ridge with radiating flames. The breast is ornamented by a circular disk with a tassel hanging from its centre. The outstretched foot grasps a globe, while the extended bill holds the body of a man as if devouring it. The wrinkled forehead and cheeks of the victim denote a person of advanced age. On the chin and lower jaw are indications of a beard, and the hair is dressed after the manner of a wig from which floats a kind of braid. From the head, in addition to these ornaments, five serpents are suspended. The ear of the human figure is ornamented by a ring with a pendant. The neck is surrounded by a double band, to the front of which is attached a circular disk with a bow in the centre. The bare arms hang down below the head. This sculpture represents the bird of the sun devouring an individual who apparently belongs to the same caste or race as the human victims shown in the other sculptures.

Sculpture Number XVII, Plate VI.

This stone, nine feet six inches long, and five feet broad, was lying adjacent to the one just described, while its sculpture represents a similar subject and may be the counterpart of it. It is again the bird of the sun, with outstretched wings, devouring a human being. The crest on the bird's head is similar to a cock's comb, and on the base of the bill are four fleshy flaps. A circular disk with an elevation in its centre ornaments the ear. A band fastened by a ring surrounds the neck.

A gorget with a tassel adorns the breast, an image of the sun is attached to the side of the bird, and the talon grasps a globe. The forehead and face of the man are wrinkled, and on the chin and lower jaw is a beard. The hair is dressed in the shape of a wig, two serpents hang down from the head, and a single ring with a circular disk having a pearl shaped globe in its centre and six similar globes on its circumference, adorns the neck and breast. The ear is ornamented with a circular disk bearing a pendant in its centre. The head has the characteristic marks of the victim represented in the other sculpture.

Sculpture Number XVIII, Plate VIII.

This is a cylindrical sculpture three feet three inches high, and two feet six inches in diameter. It represents a squatting figure whose head is broken off, the hands have claws instead of fingers, and hold on the lap a sitting skeleton, a representation of death. On account of the cylindrical form of the sculpture, the hands cannot be seen in the view represented. This skeleton, like those in other sculptures, is not correct, but characteristic enough not to be mistaken, but the skull is provided with hair in the manner of a wig. On either side extends a projection like a horn. The tongue protrudes through the closed teeth. The ears are ornamented with a kind of rosette with a pendant tassel from its centre. Two rows of ruffling surround the neck; from the front of which descends a double band to the ground, having a globe near its centre. The arms are outstretched, the forearms pointing downwards, the fleshy hands resting on the bent knees and the fleshy feet touching those of the squatting individual. On the top of the sculpture is an excavation two inches and a half deep and surrounded by a rim three inches wide. By this fact and the re-

presentation of death it would seem that this stone was used as an altar for human sacrifices. The excavation on the top might serve to receive the blood.

Sculpture Number XIX, Plate VIII.

This is a large fragment of a stone similar to those before described. The sculpture on it is greatly effaced, but enough is preserved to show that it represented the head, arms, and breast of a deity. Two entwined speech-staves cover the forehead. The ears are each ornamented with a circular disk having a boss in the centre, and a long pendant. Several strings of square stones form the necklace, and rows of circular disks, most likely of some kind of metal, hang down from the shoulder to the breast, above which two winding speech staves are seen. The left hand rests on the breast, the drooping right hand is effaced. Above the head are five rows of ornaments similar to those now used in cornices. Their position and arrangement seem to indicate their having formed the capital of a pillar. Below the deity a part of the staff is visible, which usually ascends from the mouth of a suppliant.

Sculpture Number XX, Plate VIII.

This sculpture represents an individual sitting cross-legged. It is two feet six inches high, and two feet four inches at its greatest width. The head and hands, which rested on the breast, are wanting. A double frill, with a bow-knot in the front, ornaments the neck. The remainder of two pendants indicates the position of the ears. A round brooch adorns the breast, and the hands seem to be holding an emblem of a religious character. The waist is surrounded by two bands, which intertwine in front. From this girdle descends an ornament like an apron, adorned with seven rows of circles. Owing to the want of familiar attributes it is impossible to designate the character of this statue.

Sculpture Number XXI, Plate VIII.

This represents the head and bust of a human figure holding the clenched hands to the breast. A frill surrounds the forehead. Two bands, one above the other, with a circular disk having a globe in its centre, adorn the forepart of the head. The hair, unadorned, is turned back smoothly. A pyriform pendant ornaments the ear. A row of eight circles conceals the greater part of the bust. These circles are probably the signs of numerals, as has been remarked already. From the back of the bust projects a rough piece of the stone by which it was fastened in its place. This specimen lay near the heap containing many of the other sculptures.

Sculpture Number XXII, Plate VIII.

This sculpture is two feet long, one and a half foot high, and one foot wide, and represents an animal's head, though rather grotesquely. Through the open lips four tusks are visible, with two incisions between. The jaws on the sides contain likewise two teeth. This head is encircled by a ring, from the back of which projects a part of the uncut stone, to fasten the image in its place. This stone was far removed from the others, lying in the yard of the Rectory of the village.

Sculpture Number XXIII, Plate VIII.

A stone three feet long and one foot broad has a death's head sculptured on its surface with the usual characteristics. The skull is also covered with hair, as if with a wig. From the two sides of the head extend projections like horns, and back of these four connected bands depend. The ears are adorned with circular disks each having a tassel hanging from the centre. Through the parted teeth the tongue protrudes.

REFLECTIONS ON THE SCULPTURES.

These sculptures of Santa Lucia Cosumalwhuapa are to me the most interesting of the kind that have been preserved of the ancient inhabitants of America, furnishing, as they do, unequivocal proof of the advanced culture to which their constructors had attained. Those found in other localities represent either single individuals, or groups in which the relations are obscure; but the bas-reliefs of Santa Lucia in every case but one present scenes in which there are generally two actors, one of them being a mythological personage. We are introduced into the very feelings and thoughts of the people, and learn much of their modes of living.

We are enabled to decide the progress of a people by the perfection to which they had carried the useful arts, by the advancement which they had made in the fine arts and in scientific knowledge, by their religious conceptions, and by their language, including the methods of representing it. A comparison of these also acquaints us with those things which different peoples have in common. Let us therefore compare the sculptures of Santa Lucia with those of other parts of America in these four particulars, in order that we may perceive the resemblances between their fabricators, if any exist, and form some opinion of their comparative status in culture.

As regards the useful arts, when we consider the hardness of the material, a dark gray porphyry from the volcano of Acatenango, we are convinced that the Santa Lucian sculptors used tools of great perfection. The advancement of technical skill is further attested by the variety of manufactures represented in the sculptures, such as wood-carving, textile fabrics, shell and metal work, leather work, carved stones, etc. The elevated character of these products of industry is attested by the uses to which they were put. With the exception of sculptures nine and fourteen, there is scarcely anything which indicates clothing merely. Nearly every article which is attached to the body is an ornament, although the drapery suspended from the girdle may have been introduced to hide the genital organs. The foot also may be said to derive some slight protection from its ornamented sandal. The neck, arms, body, and legs, however, are adorned and not clothed. The ornaments of the head, and especially those of the hair, are extremely profuse, reaching often to the ground. It is worthy of notice that no part of the body is mutilated for the sake of beauty, excepting the lobe of the ear, which even in our enlightened age serves the ladies as a means of perpetuating barbarism.

Again, the variety of forms in the same object is an indication of progress. The headdresses are greatly varied. In one instance (No. 1) it is a crab, in another

(No. 10) entwined serpents, and in others it is so complicated as to remind us of the fashions in highly enlightened nations. The most lavish care was bestowed on the hair, which in very few cases indeed appears without ornament, even on the heads of immolated victims. The method of ornamentation seems to have indicated the social position of the wearer. The hair is at times adjusted to resemble a wig, but is generally braided with ribbons, adorned with rings, etc., and reaches in cues to the shoulders and below them. Other yet more complicated ornaments reach to the ankles, and even trail upon the ground, ending in some animal form, as an eagle, American tiger, or a fish. One of these ornaments which is met with in every case is in the form of a sheathed scimitar.

This variety is again noticeable in the ornamentation of the ear, which assume the form of rings, embossed disks, tassels, etc., and of the neck, which may be a single band, a double collar, a ring with pendant tassel, or a necklace of many rows of beads or stones.

Generally the wrist of but one hand is adorned with a bracelet, which is either made of some textile fabric or consists of rows of stone or metal beads. The other hand is inclosed in a human skull or in that of a fierce animal. If these are the skulls of immolated victims, we have here the evidence of the sacrifice of animals as well as of human beings.

The waist, above the hip, is surrounded by a broad stiff girdle, the upper portion of which stands off from the body. On the back part of it is usually seen the head of a ferocious animal with open jaws, replaced in one instance (No. 2) by a human head. From the lower edge of the forepart of the girdle descend two kinds of sashes, the one surrounding the thighs, the other tied in a bow-knot in front. The material of these sashes varies greatly. In one instance (No. 3) it appears to consist of leaves and flowers; in another, that of the priest (No. 1), it is replaced by a serpent. A twisted band tied in a bow replaces the girdle on the waists of the immolated victim (No. 1).

The ornamentation of the leg deserves especial attention. A band with a pyriform pendant encircles the right leg below the knee in (1, 2, 4, 5, 6, 8). A single pendant is attached to the band in all cases excepting that of the person sitting on a throne (No. 9), where the entire lower edge of the band visible is occupied by six pendants. From this circumstance is supposed this person to have been the chief, or grand master—to use a heraldic term—of an order of which the others were simply knights or laymen. The occurrence of the same ornament on the neck of the figure supposed to represent the sun, indicates that an order may have existed in honor of the sun, and the members thereof may have been knights of the sun, who had their counterpart in the Virgins of the Sun in Peru.

This instance of wearing a badge on the leg below the knee is remarkable in its resemblance to the Order of the Garter in England. It is impossible to suppose that one people imitated the other, but we have here a striking illustration of the development of similar thoughts and ideas in individuals and nations widely separated in time and space. This is further impressed in the fact that these knights only wore their distinctions on high and festive occasions, or when adoring their gods; while on ordinary occasions, as with the sick man (No. 13), a simple rosette takes the place of the badge.

The protection of the feet is greatly diversified. Exceptionally both feet are nude (No. 13), but generally the bottom of one or both feet is protected by a sole, which is rolled up more or less to cover the upper part of the foot. The toes, with few exceptions, remain unprotected, and in no instance is the covering of both feet alike.

We come now to speak of the artistic taste of the sculptors of Santa Lucia as an indication of the superior culture of the people to whom they belonged. In the representation of natural forms we attribute the highest culture to those people who imitate nature most closely in her best manifestations. For this reason we should attribute to the ancient Greeks a very high degree of culture if we had received no other knowledge of their civilization excepting the relics of their works of art, which, when attempting to imitate nature, avoid all grotesqueness and caricature.

In the sculptures of Santa Lucia the human form stands before us not with ill-proportioned features, but in regular outline combined with marked expression of the countenance. The observance of these details proves a diligent study of the human body. That which does appear as grotesque, must not be attributed to a crude conception or to want of skill, but to the ornamentation, which has a barbarous luxuriance. If we examine the heads in the sculptures of Santa Lucia, we shall find that while they all possess the curved nose so characteristic of the aborigines of America, they have no stereotyped form; on the contrary this feature varies with the expression of the face, so as to individualize each person represented. Some of the faces are attractive on account of the quiet expression of their features; and one especially (No. 14) approaches very nearly to our sense of beauty. The engraving hardly does justice to the original.

Again, just as each art passes through several stages in its progress to perfection, so among all arts there is the same gradation. Thus lyric and didactic poetry are assigned a lower place than epic poetry, and the drama is the most elevated of all. Dramatic conceptions can originate and be cultivated only by a people who have passed the other stages. The monoliths of Santa Lucia show that their authors had cultivated the poetic sentiment as well as sculpture; for, not only do we find that they had statuary as well as low reliefs, but we have evidence of the degree of poetical elevation to which they had attained. All of the scenes represented are dramatic, and four of them are allegorical. In the two sculptures representing sick men, the individuals are doubtless of high standing. One of them is visited by death in the shape of a skeleton, who draws the attention of the sick man to the fact of his having lived for a number of years, indicated by the signs for numerals, and that it is, therefore, time for him to depart. In the other case (No. 14), the sick man is visited by the medicine man in the guise of a deer, and reminded of the moderate number of years he has lived, as indicated by the numeral signs. This news would cheer him with the hope of recovery.

In each of the other two allegorical sculptures, a human being is devoured by a bird, perhaps the Bird of the Sun, as it wears the image of the sun on the breast. This myth, again, has arisen independently in many lands.

The advancement of a people is also said to be measured by their religious

conceptions. If we inquire into the stage which the evolution of the religious sentiment had reached among the people of Santa Lucia, we shall find that they were passing from the adoration of the sun and other heavenly bodies to the worship of man—Anthropomorphism. Among the deities in the sculptures can still be found the sun and moon, but both represented with human forms. The entire body is not given, but only the upper, nobler part. In the images of the deities are preserved the natural human features, not disfigured by any addition of animal organs or fantastic attributes.

The sculptures prove, alas! that human sacrifices were practised by their makers. The mode of immolation was peculiar. It was not the entrails of the victims which were dedicated to the gods, nor the heart torn from the breast and thrown at the feet of the idol; but we see here the noblest part of the body, the head, severed and presented to the deity.

Finally, the language of a nation and the methods of representing it are valuable indications of their status in culture. The same may be said of their numeral system. It has been frequently affirmed that the aborigines of America had nowhere arisen high enough in civilization to have characters for writing and numeral signs; but the sculptures of Santa Lucia exhibit signs which indicate a kind of cipher writing, higher in form than mere hieroglyphics. From the mouth of most of the human beings, living or dead, emanates a staff variously bent, to the sides of which nodes are attached. These nodes are of different sizes and shapes, and variously distributed on the sides of the staff, either singly, or in twos and threes—the last named either separated or in shape of a trefoil. This manner of writing not only indicates that the person is speaking, or praying, but also indicates the very words, the contents of the speech or prayer. It is quite certain that each staff, as bent and ornamented, stood for a well-known petition which the priests could read as easily as those acquainted with a cipher dispatch can know its purport. Further, one may be allowed to conjecture that the various curves of the staves served the purpose of strength and rhythm, just as the poet chooses his various metres for the same purpose.

In the supplications of human beings this staff and its knots have a simple form, in the speeches of death the bends are angular; but the staves emanating from the deities are exceedingly complicated, and proceed, not from the mouth, but from the head or neck. To the variously bent and ramified staves of the deities, divers flowers, fruits, and mythological emblems are attached in addition to the ordinary nodes.

Besides the modes of writing just mentioned the sculptures exhibit another method of representing emotions and aspirations not expressible in words. It consisted in wavy ridges or lines originating either from the mouth (Nos. 3 and 14), or from the girdle (Nos. 2, 5, 6, 8) of the suppliant, and uniting at the upper extremity, or separated like the conventional sign for flames (Nos. 3 and 6). The artists of Palenque have expressed a somewhat similar conception by a figure blowing a horn, from the end of which proceed similar wavy lines to designate either the music or the escaping breath. (Stephens, Incidents of Travels, c. ii, 354.) Besides these methods of expressing thought there are, as before mentioned, hieroglyphics, chiefly a circular ridge inclosing the head of an animal or a pointed trefoil.

In regard to the signs for numerals, it is evident that the radix of their system, whatever may have been its value, was represented by a circle, the same sign indicating zero in our system. A single horizontal line may be taken for a unit, two lines intersecting as in a Roman X, some other value, and lines shorter than the unit may be taken for fractional parts. This system of recording numbers throws some light on the question whether the ancient inhabitants of Middle America had any intercourse with the civilized nations of Europe. Evidently, if by accident or design, Egyptians, Phœnicians, Jews, or any other race had imported their civilization into America, some traces of it would be exhibited here.

A far more interesting and important inquiry is whether the sculptors of the monoliths of Santa Lucia were identical with the nations occupying the northern portion of Central America and Mexico at the time of the discovery of those countries. By comparing the two peoples in respect to the characters previously mentioned we shall approximate to the truth. In mechanical skill there was, perhaps, little difference between them, for the Mexicans were skilful mechanics. A wider difference is observable in the art executions of the two nations. The sculptors of Santa Lucia excelled those of Mexico in their designs. The Mexican artists had not advanced to the representation of the human form unassociated with grotesque additions, while those of Santa Lucia were quite well versed therein.

A similar difference is observable in the scientific attainments of the two nations. The Mexicans observed the heavens, but astronomy is the youngest of the sciences; the Santa Lucians were well versed in a knowledge of the human form, which was quite neglected by the Mexicans. They differ still more in their religion. The Mexicans had not come to regard their gods as ennobled human nature. It was the fierce passions of man, the destructive principle which they feared in their gods, and their images were made up of all that is ugly and repulsive.

Both nations had the cruel custom of immolating human beings, but they differed in the manner of executing the victim. The Mexicans laid him upon an oblong sacrificial stone, the top of which was rounded so as to cause the protrusion of his breast. After opening the cavity, the palpitating heart was torn out and thrown at the feet of the idol. The Santa Lucians severed the head of the victim, which was done probably upon a cylindrical altar, the top of which was excavated to the depth of two inches and a half, undoubtedly to receive the blood. This sacrificial stone resembles one found on the island of Santorin and formerly used by the Greeks.[1] The severed head was placed on a small altar as an offering to the deity.

The most striking proof that these were not one and the same people is their writing. The Mexicans knew no other mode of writing than the figurative, which they employed in the rudest manner. They represented actually the object of thought to be communicated. The methods of communicating ideas employed by the Santa Lucians have been already described, and differed sufficiently from those of the Mexicans to prove their want of identity.

[1] Il Costume antico e moderno, &c. Dr. Giulio Ferraris, Firenze, 1826, VII, Tav. 9.

LIST OF ILLUSTRATIONS.

PLATE I.

SCULPTURE No. 1. A Priest with crab-like head-dress, sacrificing with a speaking obsidian knife.

SCULPTURE No. 2. A person adoring an aged divinity; the speech-staves very prominent.

PLATE II.

SCULPTURE No. 3. A worshipper and the image of Death adoring a flaming deity, probably the sun.

SCULPTURE No. 4. A worshipper adoring a deity, probably the Moon-goddess. The speech-staves are prominent.

PLATE III.

SCULPTURE No. 5. A worshipper invoking the "God of Fertility." The symbols for speech and for emotion are both present.

SCULPTURE No. 6. The general aspect similar to that of Sculpture No. 5. The symbols for speech and for emotion are quite similar.

PLATE IV.

SCULPTURE No. 7. A fragment, representing a deity enclosed in a shrine. The head-dress, resembling a crab, and the winding speech-staff, are all that remain of the priest.

SCULPTURE No. 8. A portion of a slab representing a worshipper. The personal ornaments are unique.

SCULPTURE No. 9. A person of rank, seated on a throne, and holding a club-shaped sceptre.

PLATE V.

SCULPTURE No. 10. Two persons conversing, one standing erect, and the other in an inclined position. Between the individuals are four hieroglyphics.

SCULPTURE No. 11. This slab, so far as revealed, is a collection of hieroglyphic signs.

SCULPTURE No. 12. A fragment bearing on its surface three hieroglyphics.

PLATE VI.

SCULPTURE No. 13. A sick man in the presence of Death. Circles resembling numeral signs are exhibited.

SCULPTURE No. 14. A sick man visited by a Medicine Man. The supposed numeral signs are present.

SCULPTURE No. 17. The Bird of the Sun devouring a human victim.

PLATE VII.

SCULPTURE No. 16. The Bird of the Sun devouring a human victim.

PLATE VIII.

SCULPTURE No. 15. A person ascending a ladder, his foot resting on a wheel, from which extends a vine to the top of the ladder, where a death's head is couched in the foliage. The numerals are present.

SCULPTURE No. 18. An altar-stone bearing a grotesque figure on its front.

SCULPTURE No. 19. A fragment, much effaced, representing a deity.

SCULPTURE No. 20. An image of a sitting figure. The head and hands are wanting.

SCULPTURE No. 21. The head and bust of a human figure holding the clenched hands to the breast.

SCULPTURE No. 22. The head of a fierce animal.

SCULPTURE No. 23. A small slab containing the grotesque figure of a death's head.

INDEX.

Altars shown in the sculptures, 69, 70, 81
Americans settled in Honduras, 20

Barter in Rabinal, Guatemala, 4
Beard, the presence of a, noted, 67, 70, 78, 80
Bird of the Sun, 79, 80
Bracelets in the sculptures, 83
Bridge in Guatemala, 5
    in South America, 52
Bull-fight at San Marcos, Peru, 57
Burial in Alta Vera Paz, Guatemala, 5

Calabash vessels, mode of ornamenting, 51
Casaxmalca, Peru, ruins at, 57
Cattle in Nicaragua, 25
    mode of milking in Guatemala, 10
Cave near Coban, Guatemala, 10
Chiapas, customs in, 12
Chincha Islands, 61
Circles as numerals, 81
Clothing in South America, 43
Colombia, travels in, 51
Copan, description of modern, 14
Costa Rica, the inhabitants of, 26–30
Crab, used as a head-dress, 66, 74
Customs, drinking, in Guatemala, 7
    eating, in Guatemala, 7
    marriage, in Guatemala, 13
    of raising children, in Guatemala, 9
    sleeping, in Central America, 7

Death figured as a skeleton in armor, 67
Diseases in Central and South America, 46
Dogs, abundance of, in Central and South America, 17
Domestic animals in South America, 45
Drinks in Honduras, 19
    in South America, 43
Dwellings in South America, 40

Ear-ornaments in the sculptures, 83
Ecuador, explorations in, 47, 50
Egkschi language, the, 8
Emotions, symbols for, in the sculptures, 85
Eremitas in Guatemala, 5

Festival at Ahzalku in San Salvador, 34
Festivals in Guatemala, 11
    in Leon, Nicaragua, 22
    in South America, 56, 57
Flame-symbol, 68, 69, 78
Food in Costa Rica, 29
    in Ecuador, 49
    in Guatemala, 86
    in Honduras, 19
    in Nicaragua, 25
    in San Salvador, 17
    in South America, 40
Foreigners, treatment of, in Guatemala, 11
    treatment of, in Honduras, 20
Fruit in Guatemala, 9
    in Honduras, 17
Fuel in South America, 42
Funeral of a child, 38

Galápagos Islands, 63
Girdles in the sculptures, 83
God of fertility, 71
Graves at Apaneca, San Salvador, 32
    and ruins in Ecuador, 53
Guatemala, exploration of, 3–14
Guayaquil, ruins at, 63

Head-dresses in the sculptures, 82
Hieroglyphics, 70, 77
Honduras, travels in, 14–22
Horseshoe-shaped stone from Apaneca, 33
Human sacrifices in Guatemala, 13
    in the sculptures, 85

Inhabitants of Central and South America compared, 44

Kichua language, 61
Kukri of Costa Rica, the, 27

Laborers and land-tenure in Ecuador, 48, 49
    in San Salvador, 35
Labret in the sculptures, 71
Lacandones, the, 3, 8
Ladder in the sculptures, 79
Leg-ornaments in the sculptures, 83
Los Tarros, sculptures of, 65

Maize, varieties of, in Guatemala, 11
varieties of, in San Salvador, 32
Medicine man in the sculptures, 79
Moon goddess, 70
Moskitos of Honduras, the, 21
Musical instruments in San Salvador, 31
Music in South America, 45

Nawhuatl language, the, 38
Nicaragua, the people of, 25
travels in, 22–26
Numerals, signs for, 78, 86

Obsidian implements near Rabinal, 3

Papallacta in Ecuador, its inhabitants and ruins, 48
Peru, travels in, 55–61
antiquities of, 61
the inhabitants of, 60
Peschkas of Honduras, the, 19
Pottery at Santa Ana, San Salvador, 35
near Rabinal, 4

Rabinal, ruins near, 3
Raburochi language, the, 24
Ranchos for travellers in Guatemala, 5
Reflections on the sculptures, 82
Religious conceptions of the sculptures, 84
Road to Cuzco, the ancient, 52
Ruins in Dota, Costa Rica, 29
in South America, 47
in the Llano de la Palma, San Salvador, 57
near Coban, Guatemala, 10
near Rabinal, 3
near Salinas, Guatemala, 8
near Whuerohuetenango, Guatemala, 13
of Cayambe, in Ecuador, the, 50
of Umetepet, 24
on the *hacienda* Opico, the, 22

Salinas, salt springs at, 5
Sandals in the sculptures, 84
San Pedro de Carcha in Guatemala, customs in, 9
San Salvador, explorations in, 31–37
the inhabitants of, 31
the language of, 37
Santa Lucia, the location of, 64
the sculptures of, 64–86
Schools in Guatemala, 4, 12
in San Salvador, 31
Sculptors of Santa Lucia, who they were, 86
Sculptures in Chontales, Nicaragua, 23
at Los Tarros, Guatemala, 16
at Quirigua, Guatemala, 14
near San Juan del Sur, 24
Sensunat in San Salvador, relics at, 32
Serpent ornaments, 72, 75, 78, 80
Sheep rearing in Guatemala, 10
Skill of the sculptors of Santa Lucia, 82
Skull as a gauntlet, 68, 73, 75, 79
South America, explorations in, 39–64
Speech-staves in the sculptures, 67, 68, 69, 70, 71, 72, 73, 74, 76, 78, 81, 85

Transportation, means of, in Guatemala, 7
Tuachkas of Honduras, the, 21
Tumuli near Liberia, Costa Rica, 26

Umetepet, the ruins of, 24

Viracocha Pampa, ruins at, 59

Wages in Guatemala, 5
in Nicaragua, 26
Water supply in South America, 43
Wool industry in Guatemala, 10
Whuamatschuco, ruins at, 38
Writings, aboriginal, in Guatemala, 9, 10

Xicagues of Honduras, the, 18

NO. 1.

NO. 2.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

NO. 3.

NO. 4.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE, NEW YORK.

NO. 5.

NO. 6.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

NO. 7.

NO. 9.

NO. 8

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

NO. 10.

NO. 11.

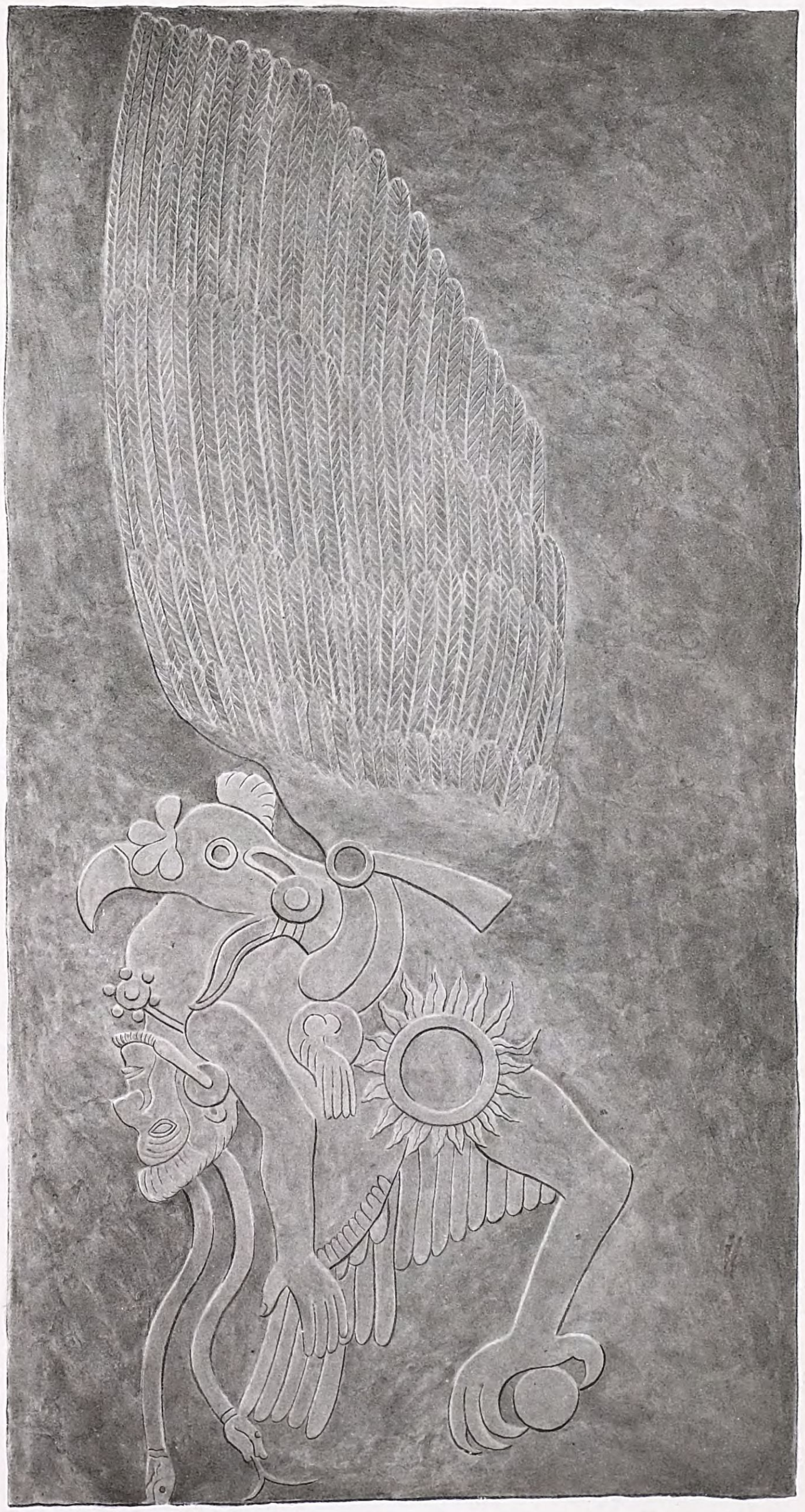
NO. 12.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT, ALBERTYPE, NEW YORK.

NO. 14.

NO. 17.



NO. 13.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

NO. 16.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

NO. 15.

NO. 18

NO 20.

Front NO. 21. Side

NO. 19

Front NO. 22 Side

NO. 23.

SCULPTURES OF SANTA LUCIA COSUMALHUAPA, GUATEMALA.

HARROUN & BIERSTADT. ALBERTYPE NEW YORK.

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.
287

THE ARCHÆOLOGICAL COLLECTION

OF THE

UNITED STATES NATIONAL MUSEUM,

IN CHARGE OF THE

SMITHSONIAN INSTITUTION,

WASHINGTON, D. C.

BY

CHARLES RAU.

WASHINGTON CITY:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
1876.

ADVERTISEMENT.

THE author of this work was entrusted with the classification of the Smithsonian Archæological and Ethnological Collections before they were transferred to Philadelphia, to form a part of the United States Government Representation at the International Exhibition of 1876.

While thus engaged, he found time to prepare the following account, which, though far from being exhaustive, will at least serve to show what ample means the National Museum presents for the study of North American archæology.

JOSEPH HENRY,
Secretary S. I.

SMITHSONIAN INSTITUTION,
Washington, August, 1876.

CONTENTS.

	PAGE
INTRODUCTION	1
STONE	7
A. Flaked and chipped Stone	7
1. Raw Material	7
2. Irregular Flakes of Flint, Obsidian, etc., produced by a single blow	8
3. Two-edged narrow Flakes of Obsidian and prismatic Cores or Nuclei, from which such Flakes have been detached by pressure	8
4. Pieces of Flint, Quartz, Obsidian, etc., roughly flaked, and either representing rude tools, or designed to be wrought into more regular forms. —Unfinished Arrow and Spear-heads	8
5. Arrow-heads	8
6. Spear-heads	10
7. Perforators	12
8. Scrapers	13
9. Cutting and Sawing Implements	13
10. Dagger-shaped Implements	14
11. Leaf-shaped Implements	15
12. Large flat Implements of silicious material, usually ovoid in shape, and sharp around the circumference (Digging Tools)	16
13. Large flat Implements, mostly of oval outline, but truncated and laterally notched at the end opposite the working edge (Digging Tools)	16
14. Wedge or Celt-shaped Implements	17
B. Pecked, ground and polished Stone	17
1. Wedges or Celts	17
2. Chisels	18
3. Gouges	18
4. Adzes	19
5. Grooved Axes	19
6. Hammers	21
7. Drilled Ceremonial Weapons	23
8. Cutting Tools	24
9. Scraper and Spade-like Implements	25
10. Pendants and Sinkers	26
11. Discoidal Stones and Implements of kindred Shape	28
12. Pierced Tablets and Boat-shaped Articles	32
13. Stones used in Grinding and Polishing	34

PAGE

14. Vessels 36
15. Mortars 38
16. Pestles 41
17. Tubes 43
18. Pipes 45
19. Ornaments 51
20. Sculptures 54

Copper 59
Bone and Horn 63
Shells 66
Clay 73
Wood 88
Supplement 90
Appendix I. 93
The Aboriginal Modes of hafting Stone and Bone Implements 93
Appendix II. 97
System adopted in arranging the Smithsonian Collection illustrative of North American Ethnology 97
I. Man, Objects relating to, ... 97
II. Culture, Objects relating to. 97
Index 103

LIST OF ILLUSTRATIONS.

Objects of flaked and chipped Stone.

			PAGE
Fig.	1.	Flint Knife in wooden handle; Pai-Utes	2
Fig.	2.	Obsidian Knife; Mexico	8
Fig.	3.	Obsidian Core; Mexico	8
Fig.	4.	Arrow-head, leaf-shaped; semi-opal; California	9
Fig.	5.	Arrow-head, convex-sided, truncated base; obsidian; Mexico	9
Fig.	6.	Arrow-head, triangular; jasper; New York	9
Fig.	7.	Arrow-head, indented base; jasper; Oregon	9
Fig.	8.	Arrow-head, notched at the sides near the base; jaspery agate; Texas	9
Fig.	9.	Arrow-head, notched at the sides; hornstone; Tennessee	9
Fig.	10.	Arrow-head, notched at the sides; hornstone; Ohio	9
Fig.	11.	Arrow-head, stemmed; flint; Ohio	9
Fig.	12.	Arrow-head, stemmed; hornstone; Pennsylvania	9
Fig.	13.	Arrow-head, stemmed; silicified wood; Ohio	9
Fig.	14.	Arrow-head, stemmed; hornstone; Ohio	9
Fig.	15.	Arrow-head, stemmed; quartz; District of Columbia	9
Fig.	16.	Arrow-head, stemmed; flint; Tennessee	9
Fig.	17.	Arrow-head, stemmed; hornstone; Tennessee	9
Fig.	18.	Arrow-head, stemmed; hornstone; Tennessee	9
Fig.	19.	Arrow-head, barbed and stemmed; hornstone; Tennessee	9
Fig.	20.	Arrow-head, barbed and stemmed; semi-opal; Oregon	9
Fig.	21.	Arrow-head, barbed and stemmed; semi-opal; Oregon	9
Fig.	22.	Arrow-head, beveled on opposite sides; flint; Tennessee	9
Fig.	23.	Arrow-head, serrated; flint; Oregon	9
Fig.	24.	Arrow-head, serrated; jasper; Louisiana	9
Fig.	25.	Arrow-head, stem bifurcated; jasper; Tennessee	9
Fig.	26.	Spear-head, convex-sided, base truncated; chalcedony; Tennessee	11
Fig.	27.	Spear-head, concave base; jasper; California	11
Fig.	28.	Spear-head, notched near the base; flint; Kentucky	11
Fig.	29.	Spear-head, stemmed; quartz schist; Pennsylvania	11
Fig.	30.	Spear-head, stemmed; flint; New York	11
Fig.	31.	Spear-head, barbed and stemmed; milky quartz; Louisiana	11
Fig.	31a.	Spear-head, with several notches near the base; jasper; Maine	11
Fig.	32.	Perforator, triangular; jasper; Ohio	12
Fig.	33.	Perforator, slender, expanding opposite the point; jasper; Oregon	12
Fig.	34.	Perforator, slender, broad base; flint; Missouri	12
Fig.	35.	Perforator, indented base; flint; Ohio	12
Fig.	36.	Perforator, stemmed; hornstone; Tennessee	12
Fig.	37.	Perforator, elongated leaf-shape; semi-opal; California	12
Fig.	38.	Scraper, beveled from one side; flint; Texas	13
Fig.	39.	Scraper, beveled from one side, stemmed; hornstone; Ohio	13
Fig.	40.	Scraper, made of a broken arrow-head; jasper; Ohio	13
Fig.	41.	Scraper, disc-shaped, chipped all around; chalcedony; Texas	13

PAGE

Fig. 42. Flake (knife); jasper; Kentucky 14
Fig. 43. Cutting Tool, with stems opposite the convex edge; flint; California 14
Fig. 44. Cutting Tool, sickle-shaped; jasper; California 14
Fig. 45. Cutting Tool, crescent-shaped; lydite; Pennsylvania 14
Fig. 46. Cutting Tool, arrow-head-shaped; jasper; Tennessee 14
Fig. 47. Cutting Tool, arrow-head-shaped; semi-opal; Georgia 14
Fig. 48. Cutting Tool, oval; hornstone; Maine 14
Fig. 49. Dagger; flint; Alabama 15
Fig. 50. Leaf-shaped Implement, pointed at one end; flint; Ohio 15
Fig. 51. Leaf-shaped Implement, broad, pointed at both ends; jasper; Louisiana 15
Fig. 52. Leaf-shaped Implement, slender, pointed at both ends; flint; Ohio 15
Fig. 53. Leaf-shaped Implement, large, pointed at one end; hornstone; Illinois 15
Fig. 54. Large Implement of oval outline (digging tool); fine-grained quartzite; Tennessee . . 16
Fig. 54*a*. Large Implement, with broad convex working edge, truncated at the opposite end (digging tool); fine-grained quartzite; Illinois 16
Fig. 55. Large Implement, oval, truncated and laterally notched at the end opposite the working edge (digging tool); fine-grained quartzite; Illinois 16

Objects of pecked, ground and polished Stone.

Fig. 56. Celt, small; hematite; Ohio 17
Fig. 57. Celt, four-sided; greenstone; Indiana 17
Fig. 58. Celt, broad butt-end; syenite; Illinois 17
Fig. 59. Celt, battered butt-end; greenstone; Tennessee 17
Fig. 60. Celt, tapering butt-end; indurated chlorite slate; Tennessee 17
Fig. 61. Celt, expanding cutting edge; cast; Louisiana 17
Fig. 62. Celt, terminating in a handle opposite the edge; greenstone; North Carolina . . . 17
Fig. 63. Chisel, round in the cross-section; diorite; Ohio 19
Fig. 64. Chisel, four-sided; lydite; New York 19
Fig. 65. Chisel, with handle; basaltic stone; Unalaska Island 19
Fig. 66. Gouge, partly hollowed; hornstone; New York 19
Fig. 67. Gouge, entirely hollowed; argillite; Pennsylvania 19
Fig. 68. Adze, gouge-like; greenstone; Massachusetts 19
Fig. 69. Adze; hornstone; British Columbia 19
Fig. 70. Hafted Adze; greenstone; Oregon 19
Fig. 71. Hafted Adze; serpentine; Northwest Coast 19
Fig. 72. Grooved Axe, groove passing entirely around; greenstone; Massachusetts . . . 20
Fig. 73. Grooved Axe, one side flat; greenstone; Arizona 20
Fig. 74. Grooved Axe, groove bounded by ridges; greenstone, South Carolina 20
Fig. 75. Grooved Axe, unusually long; cast; Wisconsin 20
Fig. 76. Grooved Axe, four-sided; greenstone; Alaska 20
Fig. 77. Grooved Axe, narrow cutting edge; graywacke; Pennsylvania 20
Fig. 78. Maul, grooved; granite; Colorado 20
Fig. 79. Hafted Maul; quartzite; Assineboins 20
Fig. 80. Hammer-stone, with a depression on each side; quartzite; New York 20
Fig. 81. Hammer-stone, with a depression on each side; quartzite; Pennsylvania 20
Fig. 82. Hammer-stone; flint; Ohio 20
Fig. 83. Drilled Ceremonial Weapon, pick-shaped; serpentine; Virginia 23
Fig. 84. Drilled Ceremonial Weapon, pick-shaped; serpentine; Pennsylvania 23
Fig. 85. Drilled Ceremonial Weapon, pick-shaped; slate; Wisconsin 23
Fig. 86. Drilled Ceremonial Weapon, pick-shaped; slate; Indiana 23
Fig. 87. Drilled Ceremonial Weapon, much curved, ends expanding; slate; Pennsylvania . . 23

PAGE

Fig. 88. Drilled Ceremonial Weapon, parts corresponding to edges strongly curved; cast; Louisiana 23
Fig. 89. Drilled Ceremonial Weapon, axe-shaped; cast; Wisconsin 23
Fig. 90. Drilled Ceremonial Weapon (fragment), bifurcated; slate; Indiana 23
Fig. 91. Drilled Ceremonial Weapon, inwardly curved sides; translucent ferruginous quartz; Indiana 23
Fig. 92. Drilled Ceremonial Weapon, crooked, blunt at one end; slate; Indiana 23
Fig. 93. Cutting Tool, semi-lunar, pierced; slate; Pennsylvania 25
Fig. 94. Cutting Tool, with lateral tang; hard red shale; Pennsylvania 25
Fig. 95. Cutting Tool, with long handle; cast; Indiana 25
Fig. 96. Scraper-like Tool, semi-circular edge, pierced; greenstone; Kentucky 25
Fig. 97. Scraper-like Tool, slightly convex edge; cast; Arkansas 25
Fig. 98. Large Tool, with convex edge, the opposite end forming a bifurcation; cast; South Carolina 25
Fig. 99. Spade-like Implement; cast; South Carolina 25
Fig. 100. Pendant, nearly pear-shaped; hornblende rock; Ohio 27
Fig. 101. Pendant, nearly pear-shaped, grooved at one end; hematite; Tennessee 27
Fig. 102. Pendant, elongated pear-shape, perforated at one end; amygdaloid; Arkansas . . . 27
Fig. 103. Pendant, swelling in the middle, grooved at one end; greenstone; Ohio 27
Fig. 104. Pendant, double conoid-shape; greenstone; California 27
Fig. 105. Sinker, expanding at the upper end and terminating in a knob; quartzite; Massachusetts 27
Fig. 106. Sinker, pear-shaped, with a knob at the narrower extremity; greenstone; Massachusetts . 27
Fig. 107. Sinker, globular, encircled by a groove; granite; Rhode Island 27
Fig. 108. Sinker, nearly globular, encircled by a groove; potstone; Georgia 27
Fig. 109. Sinker, encircled by two grooves intersecting each other; talcose slate; Rhode Island . 27
Fig. 110. Sinker (?), of elongated shape, encircled by a groove and ornamented with incised lines; sandstone; Oregon 27
Fig. 111. Sinker, notched flat pebble; quartzite; Pennsylvania 27
Fig. 112. Sinker, notched; graywacke; New York 27
Fig. 113. Sinker, notched; quartzite; Pennsylvania 27
Fig. 114. Sinker, pierced in the centre; micaceous slate; California 27
Fig. 115. Sinker, pierced obliquely near the circumference; sandstone; Ohio 27
Fig. 116. Discoidal Stone, concave on both sides; ferruginous quartz; Tennessee 29
Fig. 117. Discoidal Stone, concave on both sides; ferruginous quartz; Tennessee 29
Fig. 118. Discoidal Stone, concavities on both sides; greenstone; Illinois 29
Fig. 119. Discoidal Stone, concave on both sides and perforated in the centre; cast; Ohio . . 29
Fig. 120. Discoidal Stone, concave on both sides and perforated; quartzite; Ohio, ... 29
Fig. 121. Discoidal Stone, flat on both sides; quartzose stone; Georgia 29
Fig. 122. Discoidal Stone, small, flat on both sides; argillite; Pennsylvania 29
Fig. 123. Discoidal Stone, lenticular; ferruginous quartz; Texas 29
Fig. 124. Club-head-shaped Stone; hornblende rock; California 31
Fig. 125. Club-head-shaped Stone; greenstone; California 31
Fig. 126. Club-head-shaped Stone; serpentine; California 31
Fig. 127. Pierced Tablet, longer sides convex; slate; New York 33
Fig. 128. Pierced Tablet, longer sides concave; slate; Pennsylvania; 33
Fig. 129. Pierced Tablet, four sides curved inwardly; cast; Louisiana 33
Fig. 130. Pierced Tablet, lozenge-shaped; slate; Tennessee 33
Fig. 131. Pierced Tablet, pentagonal, longer sides concave; slate; Tennessee 33
Fig. 132. Pierced Tablet, longer sides concave, shorter sides convex; slate; Tennessee . . . 33
Fig. 133. Irregular flat Stone, showing several perforations; potstone; Pennsylvania . . . 33
Fig. 134. Boat-shaped Object, solid, two perforations; slate; Ohio 33
Fig. 135. Boat-shaped Object, hollowed, a perforation near each end; greenstone; Kentucky . . 33
Fig. 136. Oval Pebble, showing furrows radiating toward the circumference; quartzose rock; New Jersey 34
Fig. 137. Arrow-shaft-grinder; chlorite slate; Massachusetts 34

PAGE

Fig. 138. Arrow-shaft-grinder; compact chlorite; Mexico 34
Fig. 139. Arrow-shaft-grinder; hornblende rock; Southern Utah 34
Fig. 140. Polisher, oval, with truncated ends; quartzose rock; Indiana 35
Fig. 141. Polisher, rhomboidal in outline; cast; Louisiana 35
Fig. 142. Polisher, club-shaped; lydite; Pennsylvania 35
Fig. 143. Vessel of elongated shape, with projections at the narrower ends; potstone; Massachusetts 36
Fig. 144. Bowl; potstone; Wyoming 36
Fig. 145. Large Vessel, nearly globular, with a narrow aperture encircled by a raised rim; potstone; California 36
Fig. 146. Large bowl-shaped Vessel; potstone; California 36
Fig. 147. Boat-shaped Vessel; potstone; California 36
Fig. 148. Bowl; serpentine; California 36
Fig, 149. Cup; sandstone; California 36
Fig. 150. Round Plate, ornamented; graywacke; Alabama 37
Fig. 151. Rectangular Plate, ornamented; graywacke; Alabama 37
Fig. 152. Pierced Plate; potstone; California 37
Fig. 153. Mortar, hollowed boulder; sandstone; California 39
Fig. 154. Mortar, hollowed boulder; sandstone; California 39
Fig. 155. Mortar, with projections on two sides; sandstone; California 39
Fig. 156. Large Mortar, tapering toward the bottom; sandstone; California 39
Fig. 157. Small Mortar, tapering toward the bottom, ornamented; sandstone; California . . 39
Fig. 158. "Metate;" sandstone; Utah 39
Fig. 159. Slab of granite with sandstone Rubber; Navajo Indians 39
Fig. 160. Slab of sandstone, showing irregular depressions ("nut-stone"); Pennsylvania . . 40
Fig. 160a. Slab of sandstone, bearing cup-shaped cavities; Kentucky 40
Fig. 161. Pestle of conical form; syenite; California 42
Fig. 162. Pestle, terminating in a knob at the upper end; sandstone; California 42
Fig. 163. Pestle, with a small knob at the upper extremity; sandstone; California 42
Fig. 164. Pestle, showing a ring-like ridge below the tapering upper end; sandstone; California . 42
Fig. 165. Pestle, with a knob-like expanse at the lower extremity; amygdaloid; California . . 42
Fig. 166. Pestle of cylindrical form; sandstone; Rhode Island 42
Fig. 167. Cylindrical Pestle, tapering abruptly at the upper end; compact greenstone; Alaska . 42
Fig. 168. Pestle of conical form, expanding base; greenstone; Pennsylvania 42
Fig. 169. Pestle, with expanding base and truncated upper end; syenite; Ohio 42
Fig. 170. Pestle, showing an expanding base and a circular ridge below the tapering upper end; greenstone; British Columbia 42
Fig. 171. Pestle, with expanding base and similarly shaped upper extremity; silicious stone; Washington Territory 42
Fig. 172. Pestle, exhibiting a horizontal handle which terminates in round plates; greenstone; Alaska 42
Fig. 173. Disc-shaped Stone, probably employed for grinding purposes; greenstone; Georgia . . 42
Fig. 174. Muller, conoid-shaped; greenstone; Ohio 42
Fig. 175. Cylindrical Tube; steatite; Tennessee 44
Fig. 176. Tube, encircled in the middle by a raised ring; chlorite; Tennessee 44
Fig. 177. Pipe, showing a round expanding bowl on a slightly curved base ("mound-pipe"); cast; Ohio 47
Fig. 178. Pipe, with a bowl in the shape of a human head; cast; Ohio 47
Fig. 179. Pipe, carved in imitation of a beaver; cast; Ohio 47
Fig. 180. Pipe, in the shape of an otter with a fish in its mouth; cast; Ohio 47
Fig. 181. Pipe, representing a heron; cast; Ohio 47
Fig. 182. Pipe, showing the body of a bird with a human head; cast; Ohio 47
Fig. 183. Calumet-pipe; human figure with a snake coiled around its neck; cast; Ohio . . . 47
Fig. 184. Calumet-pipe, fashioned in imitation of a canine animal (wolf ?); cast; Ohio . . . 47

PAGE

Fig. 185. Calumet-pipe, in the form of a bird (eagle ?); potstone; Kentucky 48
Fig. 186. Four-sided Pipe, with lateral stem-hole; argillite; Pennsylvania 49
Fig. 187. Pipe, formed in imitation of a loon, stem-hole; serpentine; West Virginia . . . 49
Fig. 188. Pipe, representing a parrot, stem-hole; argillite; New York 49
Fig. 189. Pipe, barrel-shaped bowl, stem-hole; argillite; Ohio 49
Fig. 190. Pipe, with a high bowl rising from a flat base; chlorite; Virginia 49
Fig. 191. Pipe, in which the connection of the bowl with the neck forms a curve; serpentine; New York 49
Fig. 192. Pipe with a long stem, lizard-shaped; steatite; Pennsylvania 49
Fig. 193. Four-sided Pipe, with a neck for the stem; potstone; North Carolina 49
Fig. 194. Pipe, with a quadrilateral rim showing a human head at each corner; serpentine; Texas . 49
Fig. 195. Pipe, remarkable for a low, broad-rimmed bowl rising from a thick base; limestone; Kentucky 49
Fig. 196. Clay Pipe, with a neck for a stem; Georgia 49
Fig. 197. Conoid-shaped Pipe; serpentine; California 49
Fig. 198. Clay Pipe, representing a coiled snake (fragment); New York 49
Fig. 199. Clay Pipe, in the shape of a raven's (?) head (fragment); New York 49
Fig. 200. Bead, globular, compressed on two sides; serpentine; California 52
Fig. 201. Bead, four-sided; potstone; Pennsylvania 52
Fig. 202. Bead, with notched circumference; potstone; Pennsylvania 52
Fig. 203. Tube (bead); silicious stone; Mississippi 52
Fig. 204. Drilled Ornament, shaped like a compressed slender pyramid; Catlinite; New York . . 52
Fig. 205. Gorget, four-sided, with an ornamental border of dotted triangles; trap rock; Connecticut 52
Fig. 206. Flat oval Pebble, pierced for suspension, and ornamented with incised lines; sandstone; Rhode Island 52
Fig. 207. Flat oval Pebble, pierced for suspension; sandstone; Pennsylvania 52
Fig. 208. Shell of hematite, pierced and notched ("record"); Virginia 52
Fig. 209. Heart-shaped Ornament; argillaceous slate; Ohio 52
Fig. 210. Bird-shaped Object (amulet?), pierced with an oblique hole at each end of the base; slate; Pennsylvania 52
Fig. 211. Amulet (?). Though not presenting the shape of a bird, this object bears some analogy to the original of Fig. 210, being pierced with an oblique hole at each extremity of the flat base; slate; Ohio 52
Fig. 212. Object resembling a cylinder with an inwardly curved side-surface; this surface bears incised ornamental lines; argillaceous sandstone; Kentucky 52
Fig. 213. Ring, deeply grooved around the circumference and pierced with eight equidistant small holes radiating from the centre; cast; Ohio 52
Fig. 214. Massive grooved Ring; potstone; Pennsylvania 52
Fig. 215. Sculptured human Figure, body indistinct; crystalline limestone; Tennessee . . . 55
Fig. 216. Sculptured human Head; limestone; unknown where found 55
Fig. 217. Carved human Head; ferruginous stone; Ohio 55
Fig. 218. Sculpture of a human Head with an elaborate head-dress; volcanic rock; Mexico . . 55
Fig. 219. Carving of a human Figure, head only distinctly represented; slate; Mexico . . . 55
Fig. 220. Carving of a squatting human Figure, neck pierced; alabaster; Mexico 55
Fig. 221. Carving of a human Skull, pierced; silicified wood; Yucatan 55
Fig. 222. Sculptured Foot-track; sandstone; Missouri Valley 57
Fig. 223. Sculptured Foot-track; quartzite; Missouri 57

Objects of Copper.

Fig. 224. Celt, with adhering pieces of charcoal and cinders; Kentucky 61
Fig. 225. Axe-shaped Object, terminating at the broader end in lateral curved appendages; Kentucky 61
Fig. 226. Celt; Tennessee 61

PAGE

Fig. 227. Gouge-like Chisel; New York 61
Fig. 228. Spear-head, with tapering stem; Lake Superior District 61
Fig. 229. Spear-head, with truncated stem; Vermont 61
Fig. 230. Crescent-shaped Cutting Tool; Wisconsin 61
Fig. 231. Awl, inserted in a bone handle; Tennessee 61
Fig. 232. Sinker; Ohio 61
Fig. 233. Bead; Ohio 61
Fig. 234. Tube of copper sheet; Rhode Island 61
Fig. 235. Spool-shaped Object; Tennessee 61

Objects of Bone.

Fig. 236. Perforator; Alaska 64
Fig. 237. Perforator; Kentucky 64
Fig. 238. Perforator; Kentucky 64
Fig. 239. Needle, showing two grooves instead of an eye; California 64
Fig. 240. Harpoon-head, with a hole for attachment; Michigan 64
Fig. 241. Harpoon-head; perforated; Alaska 64
Fig. 242. Fish-hook; California 64
Fig. 243. Whistle, made of a hollow bone; California 64
Fig. 244. Whistle; California 64
Fig. 245. Cup, made of a vertebra of a cetacean; California 64
Fig. 246. Bear's Tooth, drilled; New York 64
Fig. 247. Bear's Tooth, drilled and polished; Alaska 64
Fig. 248. Drilled Claw of the grizzly bear; Rocky Mountains; recent 64
Fig. 249. Drilled Claw of the panther; California 64
Fig. 250. Drilled Ornament (?), made of the epiphysis of some animal; Kentucky 64
Fig. 251. Worked hollow Bone; California 64

Objects made of Shells.

Fig. 252. *Bysicon perversum*, transformed into a Vessel; Indiana 67
Fig. 253. Spoon made of a *Unio*-shell; Kentucky 67
Fig. 254. Celt-shaped Tool; Florida 67
Fig. 255. Celt-shaped Tool; Kentucky 67
Fig. 256. Fish-hook, made of *Haliotis*-shell; California 67
Fig. 257. *Strombus pugilis*, pierced; Florida 69
Fig. 258. *Unio*, pierced; Tennessee 69
Fig. 259. *Olivella biplicata*, truncated at the apex; California 69
Fig. 260. *Oliva literata*, apex removed; Florida 69
Fig. 261. *Pecten concentricus*, pierced; Florida 69
Fig. 262. Cylindrical Bead; California 69
Fig. 263. Cylindrical Bead; California 69
Fig. 264. Cylindrical Bead; California 69
Fig. 265. Prismatic Bead; California 69
Fig. 266. Bead, made from a columella; Georgia 69
Fig. 267. Bead, tapering at both ends, showing a part of the columellar groove; California . . . 69
Fig. 268. Pin-shaped Object; Florida 69
Fig. 269. String of Wampum, composed of white and violet beads; Upper Missouri 69
Fig. 270. Disc of *Haliotis*-shell, with five perforations and ornamented border; California . . . 69
Fig. 271. Disc of *Haliotis*-shell, showing five perforations; California 69
Fig. 272. Gorget, ornamented with an incised design; Tennessee 69
Fig. 273. Gorget; unornamented; Kentucky 69

PAGE
Fig. 274. Pear-shaped Pendant, grooved at the upper end; New York 69
Fig. 275. Ring-shaped Pendant of *Haliotis*-shell; California 69
Fig. 276. Crescent-shaped Ornament, pierced at both ends; California 69
Fig. 277. Object of *Haliotis*-shell, irregular in outline, pierced with four holes, and ornamented along the border; California 69
Fig. 278. Object of *Haliotis*-shell, irregular in shape, pierced with one hole; California . . . 69
Fig. 279. Object, made of *Lucapina crenulata*, nearly oval in outline, and showing a large oval aperture in the middle; California 69

Objects of Clay.

Fig. 280. Bowl, with four projections at the rim; Tennessee 77
Fig. 281. Bowl, with a handle representing a bird's head and neck, and a projection at the opposite side; Illinois 77
Fig. 282. Bowl, with four ears set around the shoulder; Kentucky 77
Fig. 283. Bowl, showing four projections in the plane of the rim; Tennessee 77
Fig. 284. Bowl, provided with two mutilated studs projecting below the shoulder; Arkansas . . 77
Fig. 285. Ornamented Vessel, contracting toward the aperture without forming a shoulder; North Carolina 77
Fig. 286. Vessel, provided with a low wide neck; Tennessee 77
Fig. 287. Ornamented flat-bottomed Vessel, with a wide cylindrical neck; Louisiana 77
Fig. 288. Small-necked, nearly globular Vessel; Tennessee 78
Fig. 289. Ornamented Vessel, with a wide neck; Georgia 78
Fig. 290. Flat-bottomed ornamented Vessel, with a narrow low neck; Louisiana 78
Fig. 291. Long-necked Bottle, ornamented with studs; Tennessee 78
Fig. 292. Pitcher, with ornamented neck; Utah Territory 78
Fig. 293. Large Vessel, with a slightly projecting rim and nearly conical bottom; outside marked with impressions probably produced by modeling in a woven basket; Georgia . . . 79
Fig. 294. Ornamented Vessel, showing a depression around its middle; Louisiana 80
Fig. 295. Fish-shaped Vessel; Tennessee 80
Fig. 296. Nearly globular Vessel, with a neck resembling an animal's head, one side of which forms the aperture; Tennessee 80
Fig. 297. Small globular Vessel, with a neck formed in imitation of a human head; aperture in the occipital portion; Kentucky 80
Fig. 298. Vase, elaborately ornamented with figures in relief; Mexico 82
Fig. 299. Pitcher, with two mouths and two handles; highly ornamented with raised figures; Mexico 82
Fig. 300. Hieroglyphical Tablet 83
Fig. 301. Vase, showing elaborate raised ornamentation 84
Fig. 302. Small Vessel, tapering to a point opposite the aperture; Mexico 84
Fig. 303. Small goblet-shaped Vessel; Mexico 84
Fig. 304. Human Head; Alabama 84
Fig. 305. Wolf's Head; Alabama 84
Fig. 306. Seated Human Figure with another on its back; Mexico 86
Fig. 307. Seated Human Figure with a peculiar head-dress; Mexico 86
Fig. 308. Squatting Female Figure; Mexico 86
Fig. 309. Standing Female Figure with a long gown; Mexico 86
Fig. 310. Snake, coiled on the back of a Turtle; Mexico 87
Fig. 311. Coiled Rattle-snake; Mexico 87
Fig. 312. Ornamented Spindle-whorl; Mexico 87
Fig. 313. Ornamented Spindle-whorl; Mexico 87

Objects of Wood.

PAGE
Fig. 314. Bailing-vessel; California 88
Fig. 315. Toy Canoe; California 88
Fig. 316. Sword-shaped Implement; California 88

Objects of chipped and ground Stone (Supplement).

Fig. 317. Chipped Perforator, three-sided; flint; California 90
Fig. 318. Chipped Perforator, massive opposite the point; flint; California 90
Fig. 319. Chipped Implement, sickle-shaped; flint; Ohio 90
Fig. 320. Ground Implement, club-head-shaped; greenstone; California 90
Fig. 321. Ground Implement, curved, and provided with a shoulder on the upper side, and four conical projections on the lower one; basaltic rock; Oregon 90
Fig. 322. Ground Implement, flat, tapering at one end and broad at the other, where it is pierced; argillite; Massachusetts 90

Hafted Stone Weapons.

Fig. 323. Grooved Axe; greenstone; Dakota Indians 93
Fig. 324. Celt; argillite; Indians of the Missouri Valley 93
Fig. 325. War-club, formed of a round stone firmly attached to a handle; Dakota Indians . . . 93
Fig. 326. War-club, consisting of a round stone connected with the handle by flexible thongs; Apaches 93
Fig. 327. War-club with an egg-shaped head of limestone; Blackfeet 93
Fig. 328. War-club with a head of an elongated egg-shape; greenstone; Missouri River Valley . 93
Fig. 329. Knife with a lance-head-shaped blade of slate; Nunivak Island, Alaska 93
Fig. 330. Wooden Scabbard for the same 93

Hafted Stone and Bone Tools.

Fig. 331. Hammer with a head of greenstone; Fort Simpson, British Columbia 95
Fig. 332. Adze-shaped Pick of whalebone; Mackenzie's River District 95
Fig. 333. Pick of walrus ivory; Nunivak Island 95
Fig. 334. Hoe, made of the shoulder-blade of a buffalo; Arickarees, Dakota Territory . . . 95
Fig. 335. Reaping-hook, made of the lower jaw of an antelope; Caddoes, Indian Territory . . 95
Fig. 336. Adze-like Implement, consisting of a small celt-shaped blade of argillite connected with a forked handle; Vancouver's Island 95
Fig. 337. Celt-like Chisel of argillite, attached to a cylindrical handle; Vancouver's Island . . 95
Fig. 338. Celt-shaped Chisel of argillite, connected with a handle of peculiar form; Vancouver's Island 95
Fig. 339. Flint Scraper, connected with a hook-shaped ornamented handle of elk-horn; Mandans . 95
Fig. 340. Tool of deer-horn, used in chipping stone arrow-heads, perforators, etc.; Nevada Territory 95

INTRODUCTION.

The National Museum has been for years the depository of large and valuable collections illustrative of North American Ethnology, which now form one of its most important departments. In classifying this rich material for the purpose of exhibition during the Centennial Celebration at Philadelphia, it has been thought proper to separate the objects supposed to belong to times anteceding the European occupation of the continent from those that are known to have been manufactured within the period of contact between the Indian and the Caucasian. Only thus it became possible to exhibit, approximately at least, the aboriginal state of culture before it had been modified by European influences. The first or *archæological* series, to which the following account more particularly refers, comprises objects found in mounds and other burial-places of early date, on and below the surface of the ground, in caves, shell-heaps, etc.,—in fact all articles of aboriginal workmanship that cannot with certainty be ascribed to any of the tribes which are either still in existence or have become extinct within historical times. These relics, consisting of chipped and ground stone, of copper, bone, horn, shell-matter, clay, and, to a small extent, of wood, have been grouped according to material, and then classed under such denominations as their forms suggested. Similarity of shape afforded the principal guidance in arranging these specimens, many of which leave a wide scope for conjecture as to the uses to which they were applied by their makers. The second or more strictly *ethnological* series, a description of which is not attempted at present, consists of articles obtained from existing native tribes by private explorations as well, as by expeditions undertaken by order of the United States Government, and contains almost every object tending to illustrate their domestic life, hunting, fishing, games, warfare, navigation, traveling by land—in short every phase of their existence that can be represented by tangible tokens. The use of these objects, many of which show forms copied from the manufactures of the whites, is in most cases well understood, and they have been arranged according to their mode of application, and without reference to the substances of

which they are made. This mode of classification, as stated, could not be applied to the relics composing what is called the archæological series, considering that the latter embraces a large number of specimens, and even classes of typical objects, to which it would be hazardous to assign a definite use; and this uncertainty attaches even to such common relics of the aborigines as have hitherto been thought to represent well-recognized types. Collectors, for instance, are very ready to class chipped stone articles of certain forms occurring throughout the United States as arrow and lance-heads, without thinking that many of these specimens may have been quite differently employed by the aborigines. Thus the Pai-Utes of Southern Utah use to this day chipped flint blades, identical in shape with those that are usually called arrow and spear-points, as knives, fastening them in short wooden handles by means of a black resinous substance. Quite a number of these hafted flint knives (Fig. 1) have been deposited in the collection of the National Museum by Major J. W. Powell, who obtained them during his sojourn among the Pai-Utes. The writer was informed by Major Powell that these people use their stone knives with great effect, especially in cutting leather. On the other hand, the stone-tipped arrows still made by various Indian tribes are mostly provided with small slender points, generally less than an inch in length, and seldom exceeding an inch and a half, as exemplified by many specimens of modern arrows in the Smithsonian collection. If these facts be deemed conclusive, it would follow that the real Indian arrow-head was comparatively small, and that the larger specimens classed as arrow-heads, and not a few of the so-called spear-points, were originally set in handles and were used as knives and daggers. In many cases, further, it is impossible to determine the real character of small leaf-shaped or triangular objects of chipped flint, which may have served as arrow-heads or either as scrapers or cutting tools, in which the convex or straight base formed the working edge. Certain chipped spear-head-shaped specimens with a sharp straight or slightly convex base may have been cutting implements or chisels. Arrow-heads of a slender elongated form pass over almost imperceptibly into perforators, insomuch that it is often impossible to make a distinction between them. Among the implements, weapons, etc., that have been brought into shape by pecking or grinding there are many types of unmistakable character, such as axes, adzes, mauls, mortars, pestles, pipes, etc.; yet here, too, not a few classes of objects are met to which a definite use cannot be ascribed. Among the latter are disc-shaped stones, pierced tablets, tubes, rings, pendants, and various other

1

Flint Knife in wooden handle (½).

typical articles. In many instances it cannot be determined whether an object was designed for use or for ornament.

In order to classify the numerous articles composing the archæological series, it was necessary, of course, to arrange them under different heads; but in consideration of their too often doubtful mode of application it cannot be asserted that the specimens represent in all cases the characters attributed to them by the titles under which they have been classed. Nor does the division into two groups intended to illustrate different periods warrant absolute exemption from errors, considering that a number of the articles embraced in the archæological series may have been made after the arrival of the Caucasians in North America, especially such relics as are derived from districts inhabited by tribes that became in comparatively recent times acquainted with the manufactures and commodities of the whites. Yet, after due consideration, the system here adopted seemed better calculated to exhibit the former and present state of the aborigines than any other arrangement presenting the whole available material under one general aspect.

By far the greater number of specimens in the archæological department are manufactures of stone, being fashioned either by flaking or the more tedious process of chipping, or by pecking, grinding and polishing. The chipped series chiefly comprises arrow and spear-heads, cutting and scraping tools, saws, perforators, and digging implements. These articles are usually made of hard silicious stone of conchoidal fracture, such as hornstone, jasper, chalcedony, ferruginous quartz, and other kindred varieties, all of them occasionally comprised in these pages, for the sake of brevity, under the general term "flint," though the real cretaceous flint, which has played such an important part in the prehistoric ages of Europe, does not seem to occur in this country. Many arrow and spear-heads consist of the common white quartz, and some are made of different kinds of stone of inferior hardness. The volcanic obsidian is represented by a beautiful series of Mexican knives and cores, and by arrow-heads, etc., derived from regions north of Mexico. Some Indian tribes still arm their arrows with points of obsidian. In the manufacture of ground and polished weapons, tools and ornaments, the aborigines employed every kind of stone, both hard and soft, suited to their purposes. Grooved axes, celts, adzes, pestles, etc., are very frequently made of varieties of greenstone, a substance which, being hard as well as tough, was well fitted to withstand rough use. Some drilled and highly finished ceremonial weapons are made of the hardest silicious materials, showing that the aborigines were in this respect in advance of the prehistoric races of Europe, who scarcely ever attempted to drill stone of such hardness. Quartzite, sandstone, serpen-

tine, hematite and slate often constitute the materials of ground articles. More precise statements will be made in the proper places.

Though the Smithsonian collections chiefly embrace aboriginal manufactures, ancient and recent, derived from the northern half of the continent, or, in other words, from the vast territory bounded by the Atlantic and the Pacific, the arctic regions and the southern frontier of Mexico, it possesses, in addition, many valuable specimens, and even large collections, from the Antilles and from Central and South America. Perhaps the most important of these collections is one from Porto Rico, presented by the late Mr. George Latimer, for a long time a resident of that island. It comprises many specimens of pottery of a peculiar character, and several hundred articles of stone, among them one hundred and twenty-seven celts, numerous pestles, masks, rubbing-stones, and, above all, a rich series of those curious oval or horse-collar-shaped objects, which have for many years attracted the attention and elicited the comments of archæologists, both in Europe and in America. This collection is probably unsurpassed by any other derived from the Island of Porto Rico. The Central American States are represented by hundreds of specimens of pottery and objects of stone, some of them of remarkable character. The large stone idols obtained by Mr. E. G. Squier in Nicaragua, and described and figured by him in his well-known work on that State, are among the most valued relics of the National Museum. Peru has furnished a large collection of pottery, consisting of one hundred and twenty vessels moulded in the peculiar style formerly prevalent among the aborigines of that country, and also a number of mummies, or rather desiccated human bodies. The other parts of South America—Chile, Guiana, Brazil, and even the southernmost region of the continent, Tierra del Fuego—have likewise contributed their share to enrich the Museum of the capital.

In conclusion, it should be stated that the Smithsonian collections are not derived exclusively from America, but that they likewise embrace manufactures of many races of other parts of the world. Thus, there may be seen in the Museum a great variety of relics pertaining to the prehistoric ages of Europe, such as rude flint implements from the drift of France and England, articles of stone, horn and bone found in the celebrated caves of the Dordogne (Southern France), a large and varied series of Swiss lacustrine antiquities, and many neolithic weapons and tools from Denmark and other districts of Northern Europe. Still more numerous are weapons, utensils, textile and ceramic fabrics from Asia, Africa, Australia, and the island groups of the Pacific. Many of these products of art, including the boomerang of the Australian savage and the carved war-club of the Feegeean, as well as the fin-

ished tissues and implements of China and Japan, were procured in the course of explorations undertaken at the expense of the United States Government, as before stated. Among them the circumnavigation of the globe under the command of Captain Wilkes and Perry's expedition to Japan deserve special mention.

The following descriptions refer only to the *typical* objects in the collection. The classification might have been much extended by the introduction of subdivisions, if the character of this publication had permitted a more exhaustive treatment of the subject. The present condensed account is but the forerunner of more minute archæological and ethnological works, which will be published in due time under the auspices of the Smithsonian Institution.

I. STONE.

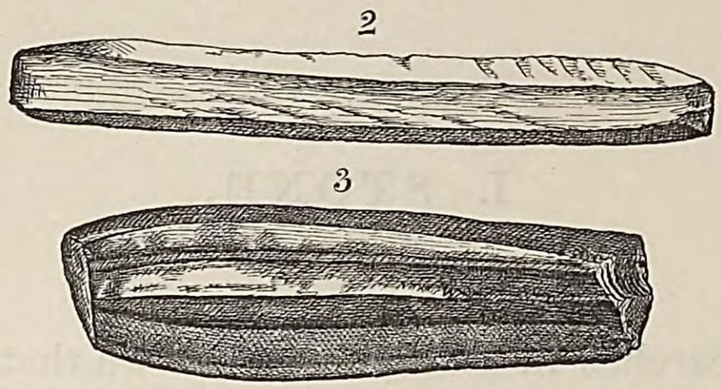
Archæological researches in Europe have shown that the early inhabitants of that continent used for a very long period exclusively rude tools and weapons of chipped flint, until they began to render their implements of war and peace more serviceable by the process of grinding. Archæologists, therefore, divide the European stone age into a period of chipped and one of ground stone, or, technically speaking, into a *palæolithic* (old-stone) and a *neolithic* (new-stone) period. Palæolithic implements occur in ancient beds of river-gravel and in cave-deposits of early date, and are often associated with the osseous remains of the mammoth, woolly-haired rhinoceros, cave-bear, cave-lion, and other pachydermatous and carnivorous animals now extinct in Europe. The implements of the later or neolithic period indicate a more advanced state of human development, and the animal remains sometimes found with them belong to species still existing in Europe, or known to have there existed within historical times. Thus the gradual progress in the mechanical skill of the prehistoric European is illustrated by his works of art, which present, as it were, an ascending scale, beginning with the rude flint flake or the roughly fashioned hatchet-blade, and terminating with the elaborately chipped dagger or lance-head, the pierced axe, and other types in vogue immediately before the introduction of bronze.

In North America chipped as well as ground stone implements are abundant; yet they occur promiscuously, and thus far cannot be respectively referred to certain epochs in the development of the aborigines of the country, and hence the here adopted separation of North American stone articles into a chipped and a ground series has no chronological significance whatever, but simply refers to the modes of manufacture.

A. FLAKED AND CHIPPED STONE.

1. Raw Material.—As such may be considered pieces of flint, etc., rudely blocked out and presenting no definite form. The Museum possesses a series of these roughly prepared fragments, which were obviously designed to be made into implements. They are often of comparatively large size, and generally consist of some kind of silicious material (hornstone, jasper, etc.). They occur, sometimes many of them together, in various parts of the United States.

2. Irregular Flakes of Flint, Obsidian, etc., produced by a single blow.—Some may represent cutting tools of the most primitive kind.



OBSIDIAN KNIFE AND NUCLEUS ($\frac{1}{2}$).

3. Two-edged narrow Flakes of Obsidian and prismatic Cores or Nuclei, from which such Flakes have been detached by pressure (Figs. 2 and 3, Mexico).—The mode of manufacture of these flakes or knives has been described by some of the early Spanish authors on Mexico.[1] Obsidian breaks like the cretaceous flint of Europe, and hence the Mexican knives are identical in shape with the neolithic flint knives found in the countries bordering on the Baltic Sea.

4. Pieces of Flint, Quartz, Obsidian, etc., roughly flaked, and either representing rude tools, or designed to be wrought into more regular forms.—Unfinished Arrow and Spear-heads.

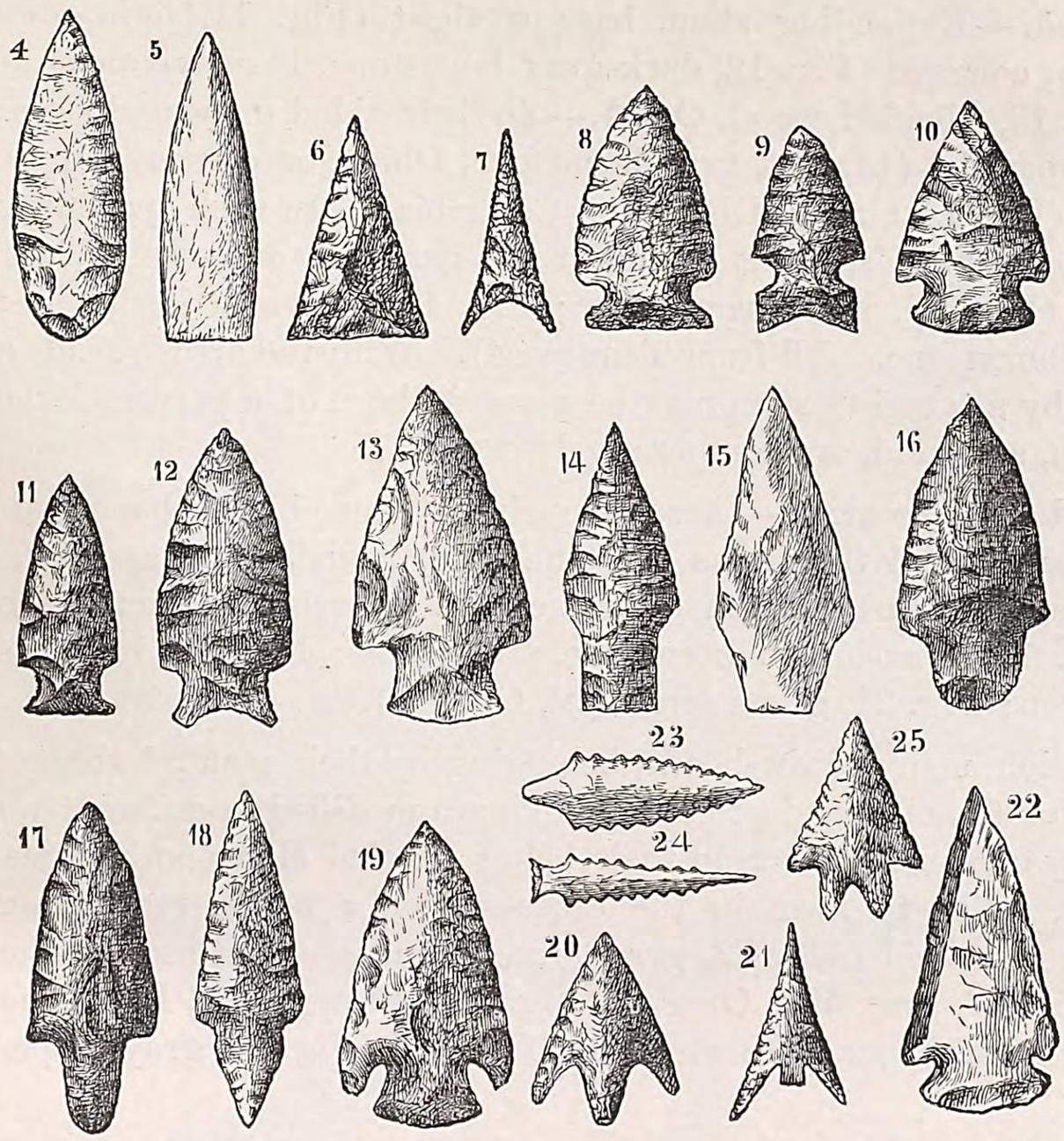
5. Arrow-heads.—They are the most abundant aboriginal relics in the United States; but being chiefly made of hard and brittle silicious materials, they were easily damaged in hitting the object at which they were aimed, and many of them consequently bear the marks of violent use. Yet perfect specimens are by no means scarce. The art of arrow-making survives to the present day among certain Indian tribes inhabiting parts of the United States not yet settled by whites, and the National Museum contains a large number of modern stone arrow-heads (partly in shafts) which equal, and even surpass in workmanship, the best specimens picked up in fields or recovered from old Indian burial-places. The modes of their manufacture have been witnessed and described by explorers, and these operations now appear less difficult than they were formerly supposed to be.

A classification of the arrow-heads with regard to their chronological development is not attempted, and hardly deemed necessary. North American Indians of the same tribe (as, for instance, the Pai-Utes of Southern Utah)

---

[1] The fullest account is given by Torquemada (*Monarquia Indiana*, Seville, 1615). The Aztec artisan, he states, dislodged the obsidian flakes from the block by pressure, employing a large wooden T-shaped implement, which acted somewhat in the manner of a punch, the cross-piece resting against the chest. A translation of Torquemada's description is to be found in E. B. Tylor's "Anahuac," London, 1861, p. 331. Motolinia makes similar statements, which, it is believed, have not yet been quoted in English works.

arm their arrows with stone points of different forms, the shape of the arrow-head being with them merely a matter of individual taste or of convenience. It is here only intended to present the characteristic types of these weapons. Yet any such arrangement must be arbitrary to a great extent, owing to the many intermediate forms in which the distinguishing peculiarities are wanting, and the same difficulty is met in the classification of stone articles in general, may they be chipped or ground.



ARROW-HEADS ($\frac{1}{2}$).

a. Leaf-shaped, base pointed or rounded (Fig. 4, gray semi-opal, California). Those with a pointed base imperceptibly pass over into the lozenge form, which is not very frequently met.

b. Convex-sided with truncated base (Fig. 5, transparent obsidian, Mexico). Specimens of this description often approach the triangular shape.

c. Triangular, forming an equilateral or isosceles triangle (Fig. 6, gray jasper, New York). Perfectly triangular arrow-points are less frequent than those of the following class.

d. Straight-sided with more or less concave base. In some the concavity assumes the character of a deep indentation by which barbs are produced

(Fig. 7, brown jasper, Oregon). There are varieties of this type, in which the sides appear more or less convex, or straight near the base to a certain distance, where they form obtuse angles or shoulders from which they converge to the point.

e. Notched at the sides near the base, which is straight (Fig. 8, jaspery agate, Texas), concave (Fig. 9, light-brown hornstone, Tennessee), or convex (Fig. 10, gray hornstone, Ohio).[2]

f. Stemmed.—Expanding stem, base straight (Fig. 11, light-colored flint, Ohio), concave (Fig. 12, dark-gray hornstone, Pennsylvania), or convex (Fig. 13, silicified wood, Ohio).—Straight-sided truncated stem; sides of stem parallel (Fig. 14, gray hornstone, Ohio), or converging toward the base (Fig. 15, quartz, District of Columbia). In such specimens the base of the stem is straight or concave.—Rounded or more or less tapering stem (Fig. 16, light-brown flint; Fig. 17, brownish hornstone; Fig. 18, gray hornstone. All from Tennessee). With the arrow-heads characterized by a tapering stem may be classed those of a perfect lozenge form, which, as stated, are comparatively scarce.

g. Barbed and stemmed.—There is much difference in the shape and length of the barbs, and the stems are truncated, rounded or tapering, etc., thus presenting nearly all the forms seen in unbarbed stemmed arrow-heads (Fig. 19, gray-brown hornstone, Tennessee; Fig. 20, brown semi-opal, Oregon; Fig. 21, green semi-opal, Oregon).

In addition, many arrow-heads, belonging by their general shape to one or the other of the classes just enumerated, are modified in different ways. The peculiarity of some consists in their being beveled along both edges on opposite sides, so as to form in the cross-section a figure resembling a long-stretched rhomboid (Fig. 22, gray flint, Tennessee); others exhibit serrated edges (Fig. 23, gray flint, Oregon; Fig. 24, yellow jasper, Louisiana); and in a number of specimens the stem is bifurcated (Fig. 25, gray jasper, Tennessee).

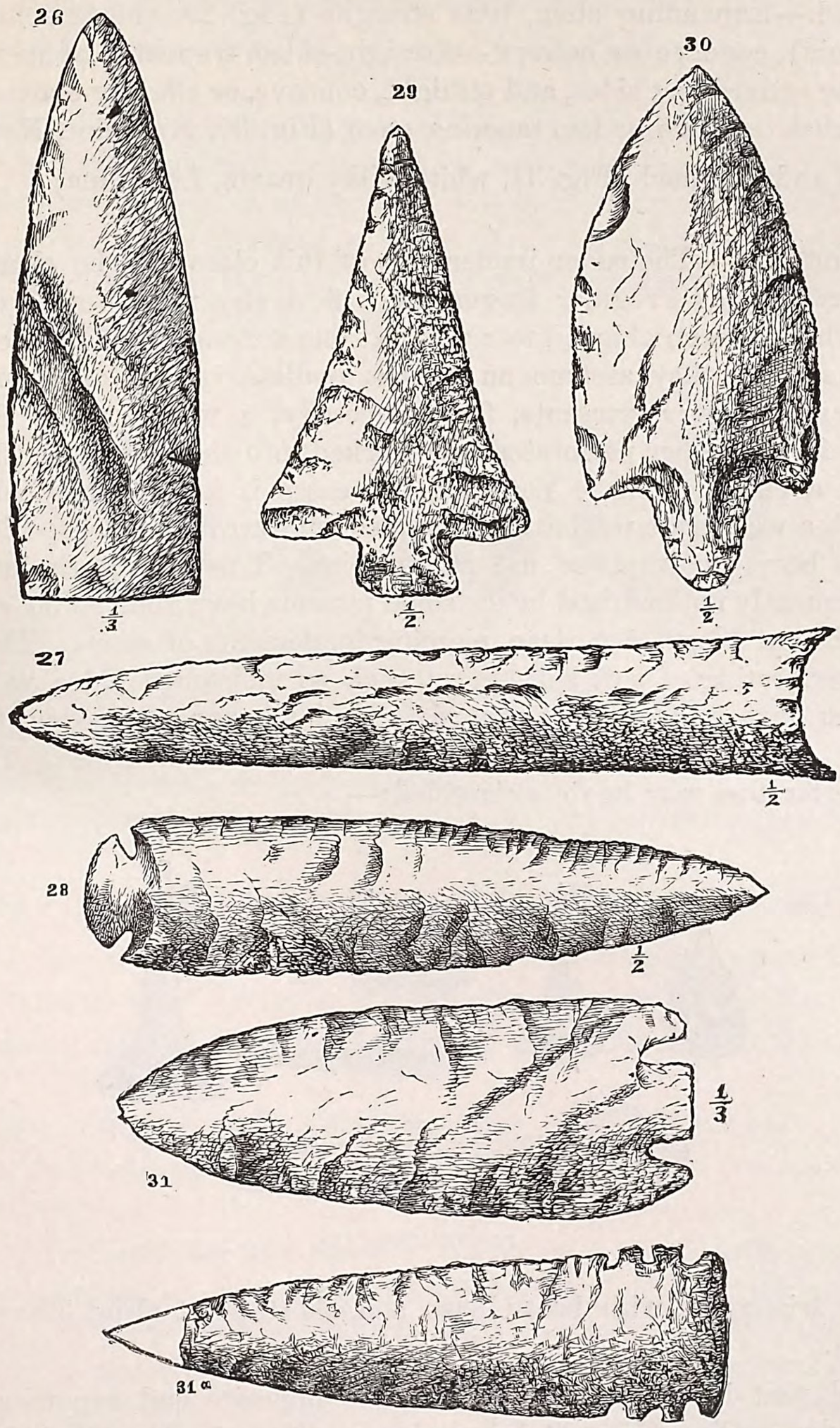
6. Spear-heads.—The articles brought under this head are almost as varied in shape as those designated as arrow-heads, and in many instances they present exactly the same forms, the only distinguishing feature being their larger size.[3] As before stated, many of the so-called spear-heads may have been inserted in wooden handles, to serve as cutting tools.

---

[2] In quite a number of notched flint arrow-heads with convex base, and also in many spear-heads (?) of corresponding shape, the curved base-edge exhibits a marked *polish*, as though they had been employed as scraping or smoothing tools. The polish is not intentionally produced, but evidently the result of a long-continued use, totally different from that for which these articles would seem to have been designed.

[3] In separating arrow-heads from the larger objects of similar shape, the writer follows a usage rather than his own inclination.

a. Triangular or more or less convex-sided, sometimes very slender; base straight (Fig. 26, light-gray chalcedony, Tennessee), concave (Fig. 27, yellow jasper, California), or convex, in some cases bluntly pointed.



SPEAR-HEADS.

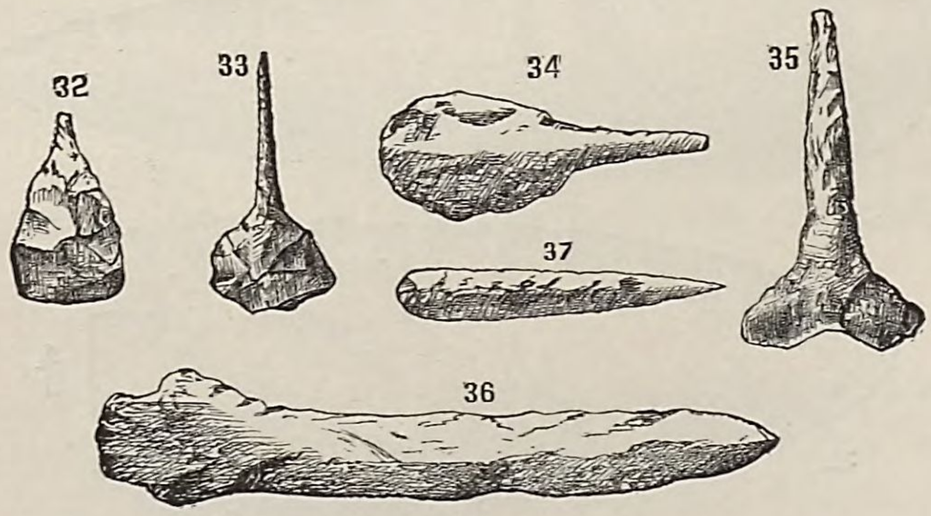
b. Notched at the sides near the base, the latter being straight, concave, or convex (Fig. 28, gray flint, Kentucky). Barbs are sometimes formed by

the notching, and the beveling on opposite sides, as in arrow-heads, is occasionally to be noticed. Quite exceptional are spear-heads exhibiting several notches at the base (Fig. 31 *a*, brown jasper, Maine; half size).

c. Stemmed.—Expanding stem, base straight (Fig. 29, quartz schist, Pennsylvania), concave or convex.—Straight-sided truncated stem with parallel or converging sides, and straight, concave, or slightly convex base.—Rounded or more or less tapering stem (Fig. 30, gray flint, New York).

d. Barbed and stemmed (Fig. 31, white milky quartz, Louisiana).

7. Perforators.—The ruder implements of this class may be characterized in a general way as irregular fragments of flint, etc., mostly of an elongated form, which have been chipped to a point at one extremity, and hence it may be imagined that they assume an almost endless variety of shapes. The pointed part, however, presents, from necessity, a more or less developed pyramidal form. Other perforators are worked into shapes sufficiently defined to permit a classification. Yet in many cases it is extremely difficult to distinguish a well-made perforator from a slender arrow-head, especially when the former bears no traces of use at its point. This apparently intact state can be frequently noticed, and hence some persons have gone so far as to deny the existence of North American piercing implements of stone. They forget that the perforating of soft substances, such as moistened hides, would have little effect on a tool of hard material. It is known, moreover, that such implements are still made and used by remote Indian tribes. The more regular perforators may be thus classified:—



PERFORATORS ($\frac{1}{2}$).

a. Almost triangular with broad base and short point (Fig. 32, red jasper, Ohio).

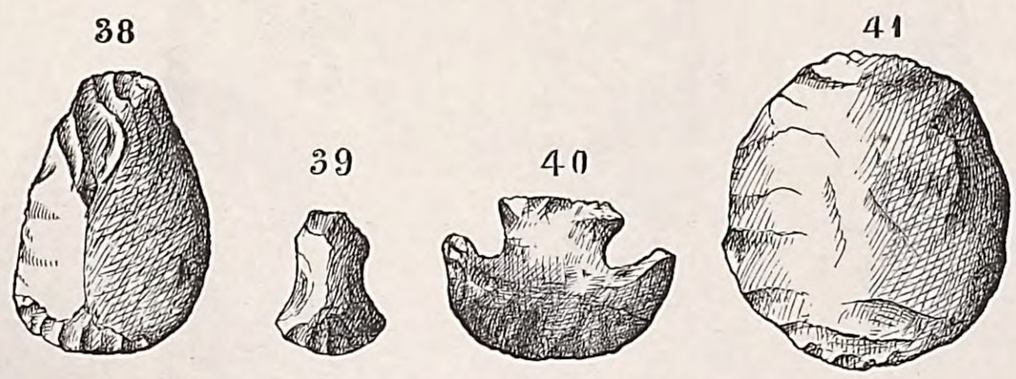
b. Pointed part long and slender, and the opposite end expanding and of irregular outline (Fig. 33, brown jasper, Oregon; Fig. 34, white opaque flint, Missouri).

c. Pointed part long and slender, and expanding base indented, presenting lateral wings (Fig. 35, light-gray flint, Ohio).

d. More or less slender with expanding lower part, which is notched at the sides, or terminates in a stem (Fig. 36, gray hornstone, Tennessee). It may be assumed that perforators of this form as well as of others which afforded no firm grasp to the hand were inserted into handles.

e. Elongated leaf-shape (Fig. 37, gray semi-opal, California).

8. **Scrapers.**—Thick flakes of flint, obsidian, etc., worked at one extremity into a convex or semi-lunar edge. Some are thus prepared at both ends. These tools were used in cleaning skins, and in scraping and smoothing horn, bone, wood, etc. The Eskimos still use stone scrapers set in well-shaped handles of walrus ivory, horn, or wood. Several specimens of this kind are in the collection of the National Museum.



SCRAPERS ($\frac{1}{2}$).

a. Working edge beveled from one side, the lower surface forming a continuous unaltered fracture (Fig. 38, gray flint, Texas). A few are beveled at both ends, and may be called double scrapers. Some terminate in stems opposite the working edge (Fig. 39, compact gray hornstone, Ohio).

b. Working edge chipped from both sides, sometimes at both extremities.

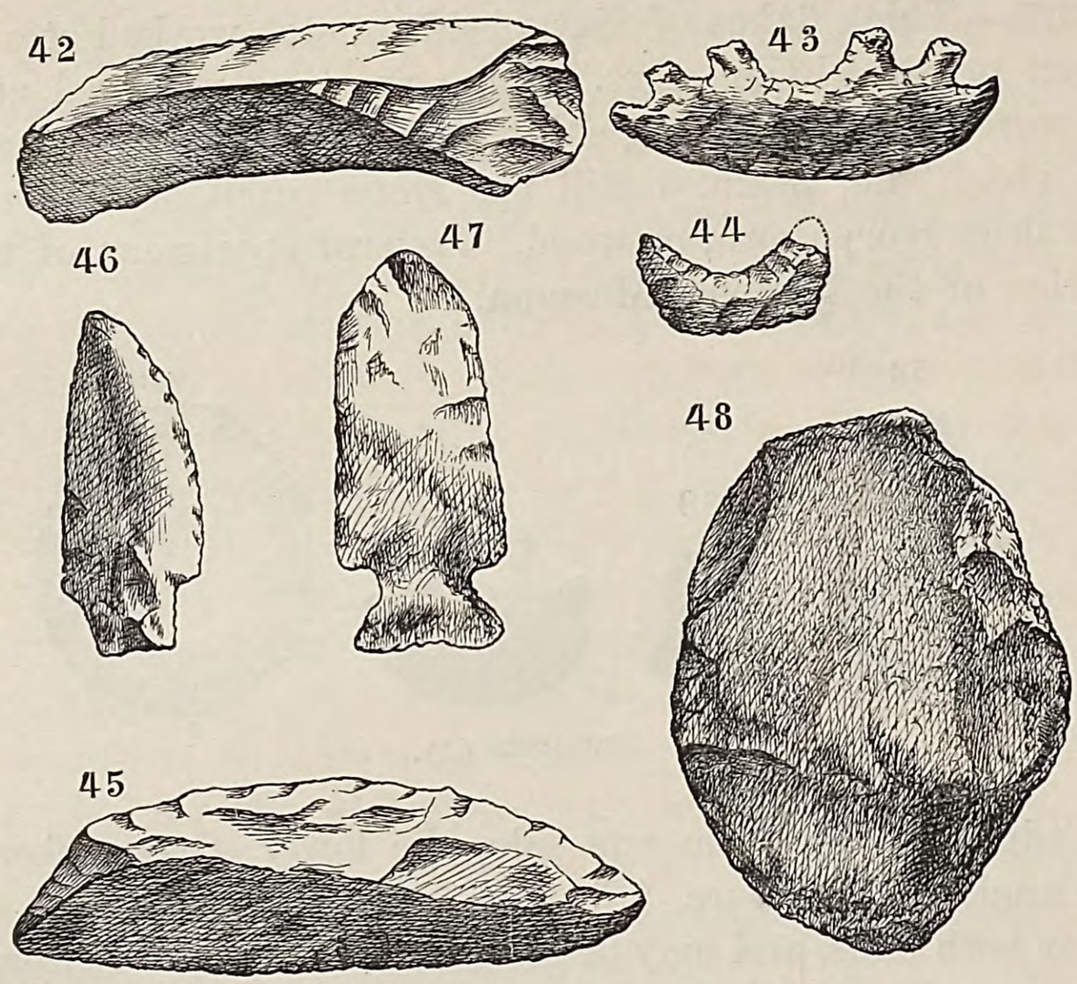
c. Made of the lower portions of broken arrow and spear-heads; working edge chipped from one side or from both (Fig. 40, yellow jasper, Ohio).

d. Disc-shaped, chipped all around (Fig. 41, bluish chalcedony, Texas).

9. **Cutting and Sawing Implements.**—This group comprises a series of implements which, though differing in form, seem to have been designed for kindred purposes.

a. Flakes of flint and obsidian, more or less chipped at the edges, apparently for the purpose of being used in cutting and sawing (Fig. 42, yellow jasper, Kentucky). The silicious materials out of which such flakes are usually made cannot be split as regularly as the cretaceous flint of Europe, and hence the well-shaped neolithic flakes so frequent in Denmark, Northern Germany, etc., hardly find counterparts among the stone tools occurring north of Mexico. The obsidian flakes from the last-named country, as has been stated, are identical in shape with the corresponding European specimens.

b. Implements with chipped convex edges, mostly serrated at the opposite side, or provided with a row of stems, perhaps for being more securely hafted (Fig. 43, gray flint, California). The specimens of this character were all obtained from California, where the aborigines are known to have employed asphaltum for cementing their stone tools into handles.



CUTTING TOOLS ($\frac{1}{2}$).

c. Small sickle-shaped implements designed, as it seems, for some cutting purpose (Fig. 44, dark-brown jasper, California).

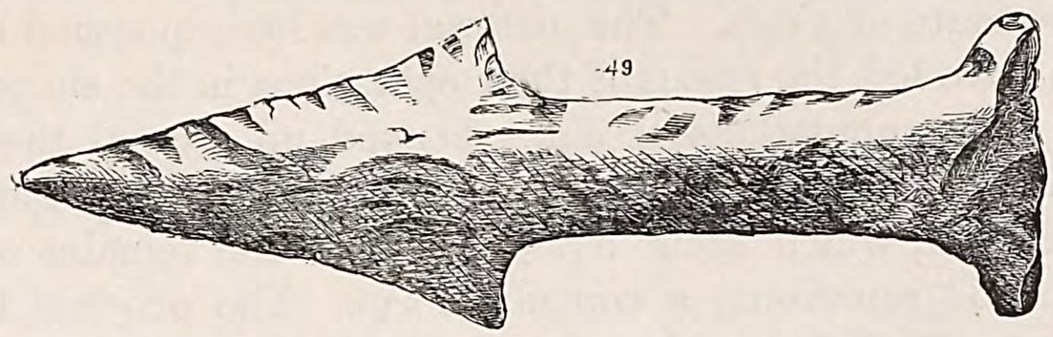
d. Crescent-shaped implements, some of them truncated at one end; probably knives and saws (Fig. 45, lydite, Pennsylvania). A somewhat similar type occurs in Northern Europe.

e. Arrow-head-shaped (notched or stemmed) implements, apparently representing sawing and cutting tools, the part used being either one of the sides which is convex, or the obtuse point (Fig. 46, reddish jasper, Tennessee; Fig. 47, semi-opal, Georgia).

f. Roughly chipped implements with convex edges and massive backs. They resemble the "choppers" found in some caves of Southern France, and described by Lartet and Christy in the "Reliquiæ Aquitanicæ" (Fig. 48, gray hornstone, shell-heap, Maine).

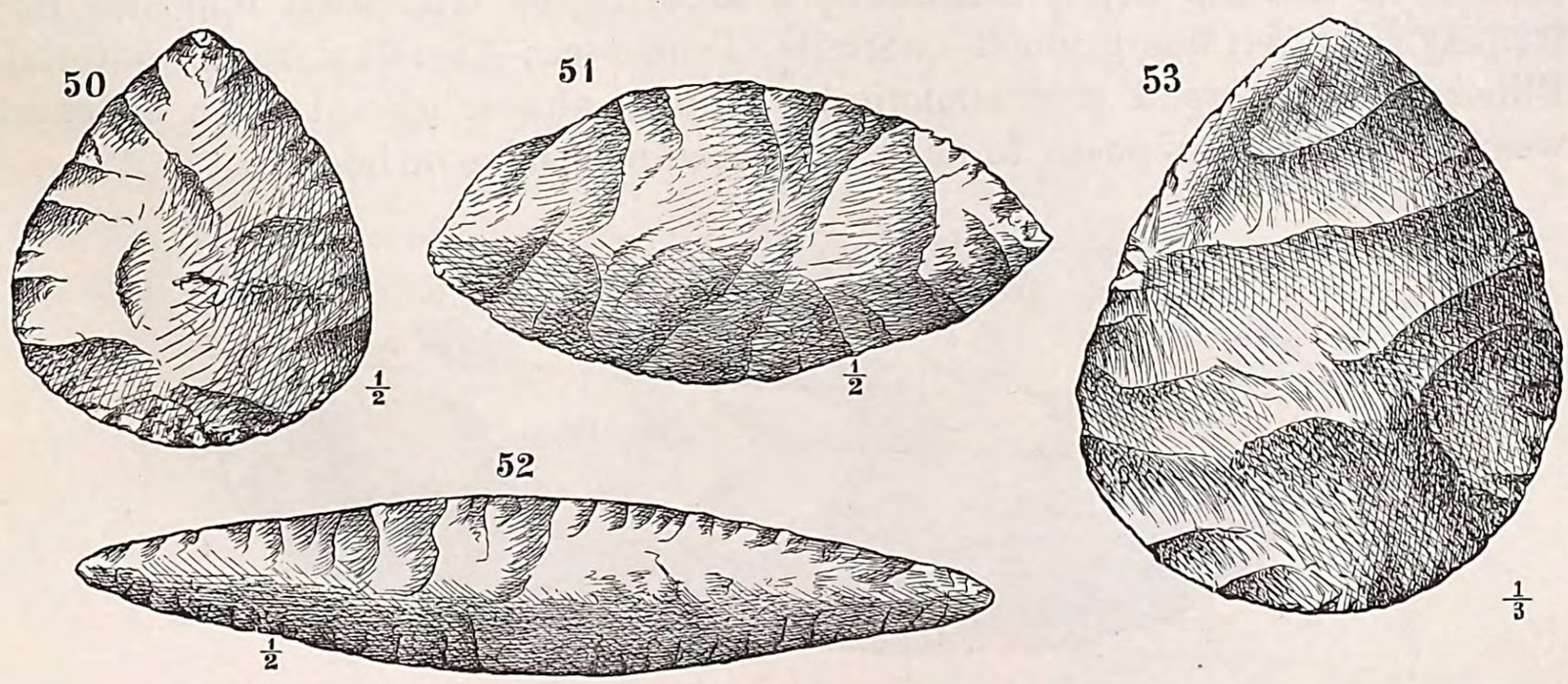
10. Dagger-shaped Implements.—The dagger form is in most cases indicated rather than fully developed. There is, however, in the collection a

beautiful specimen remarkable for a well-wrought handle (Fig. 49, gray flint, mound in Alabama). Similar objects are preserved in the Copenhagen Museum.



DAGGER ($\frac{1}{2}$).

11. Leaf-shaped Implements.—Perhaps mostly used for cutting and scraping; some may be unfinished tools.



LEAF-SHAPED IMPLEMENTS.

a. Pointed at one end and more or less rounded at the other extremity; sides straight or exhibiting various gradations of convexity. Many specimens of this class present an almond shape, and are thin and sharp-edged. There can be little doubt as to their use as cutting tools (Fig. 50, light-gray flint, Ohio).

b. Approaching an oval shape.

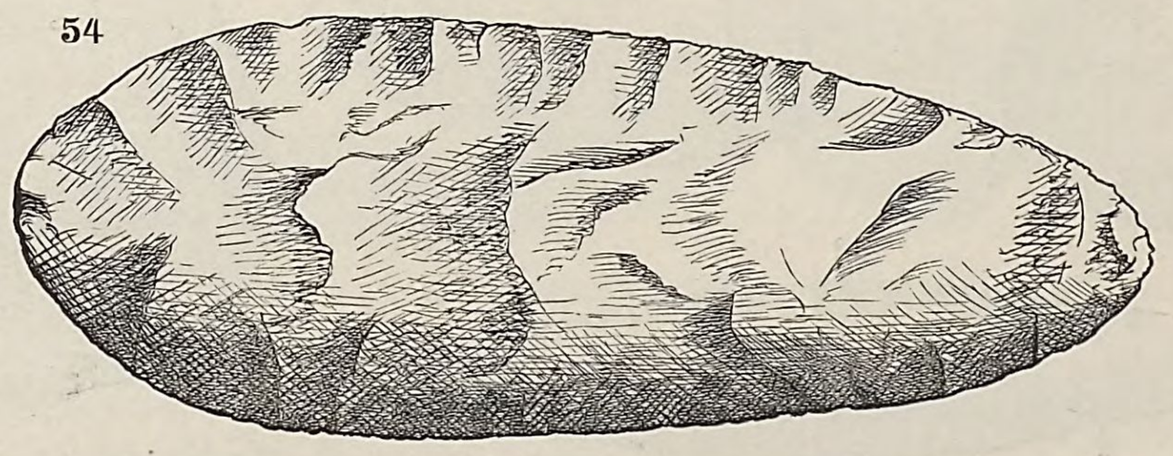
c. Pointed at both ends, broad in the middle, or more or less elongated. They differ much in size, the smaller specimens being not larger than arrow-heads (Fig. 51, brown jasper, Louisiana; Fig. 52, gray flint, Ohio).

d. Large flat implements of roundish, oval, or almond shape, either rudely blocked out, or chipped with more or less care around the circumference. Some appear slightly worn at the edge, as though they had been used for scraping purposes. They occur mostly in mounds and in deposits under

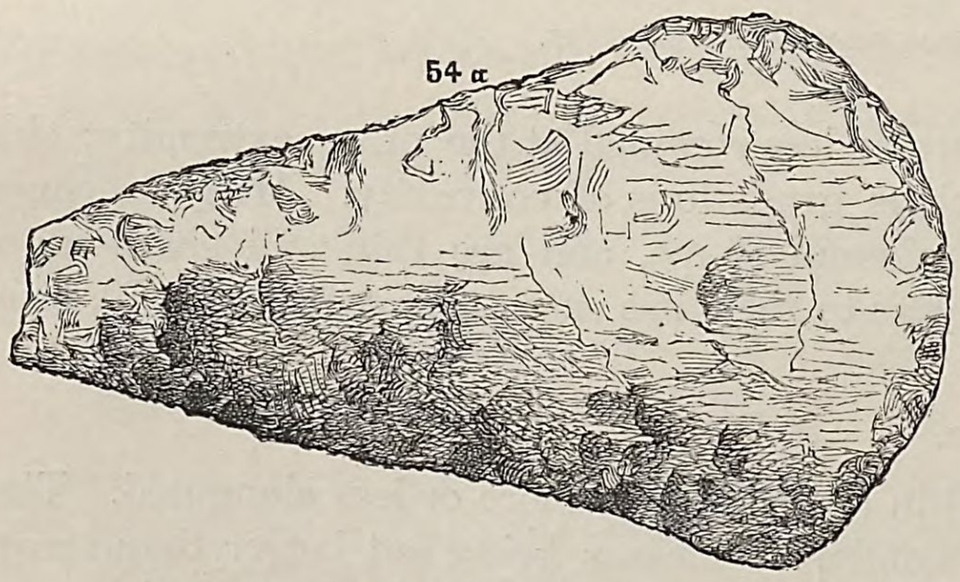
the ground, sometimes comprising many hundred specimens. Such deposits have been met from the Mississippi to the Atlantic States. The implements in question frequently consist of the peculiar stone of "Flint Ridge," an elevation extending through Licking and Muskingum Counties in the State of Ohio. The material was here quarried by the aborigines, who have left the traces of their operations in the shape of numerous pits and of accumulations of chips heaped up around them.[4] Many of the specimens closely resemble in shape and size the "hatchets" of the European drift, which occur associated with the remains of extinct animals (Fig. 53 represents a common form. The original belonged to a regular deposit of about fifteen hundred specimens, which was discovered at Beardstown, Cass County, Illinois).

12. Large flat Implements of silicious material, usually ovoid in shape, and sharp around the circumference. Some expand considerably at the broader or cutting edge, exhibiting a tapering or truncated opposite extremity (Fig. 54, fine-grained quartzite, Tennessee; Fig. 54 *a*, same material, Illinois).—The broad part sometimes appears almost glazed from constant wear. They are supposed to have been used as spades or hoes.

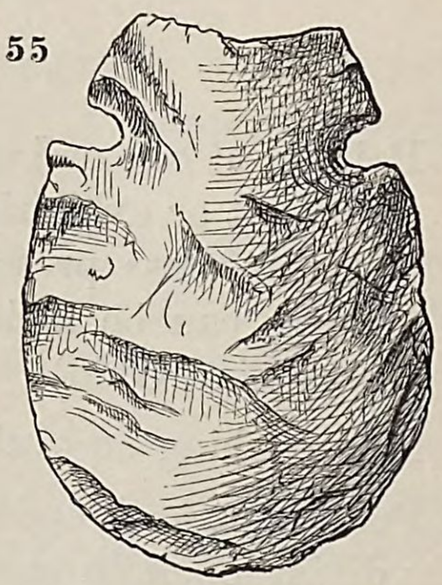
54



54 a



55



DIGGING TOOLS ($\frac{1}{3}$).

13. Large flat Implements mostly of oval outline, but truncated and laterally notched at the end opposite the working edge (Fig. 55, Illinois).—

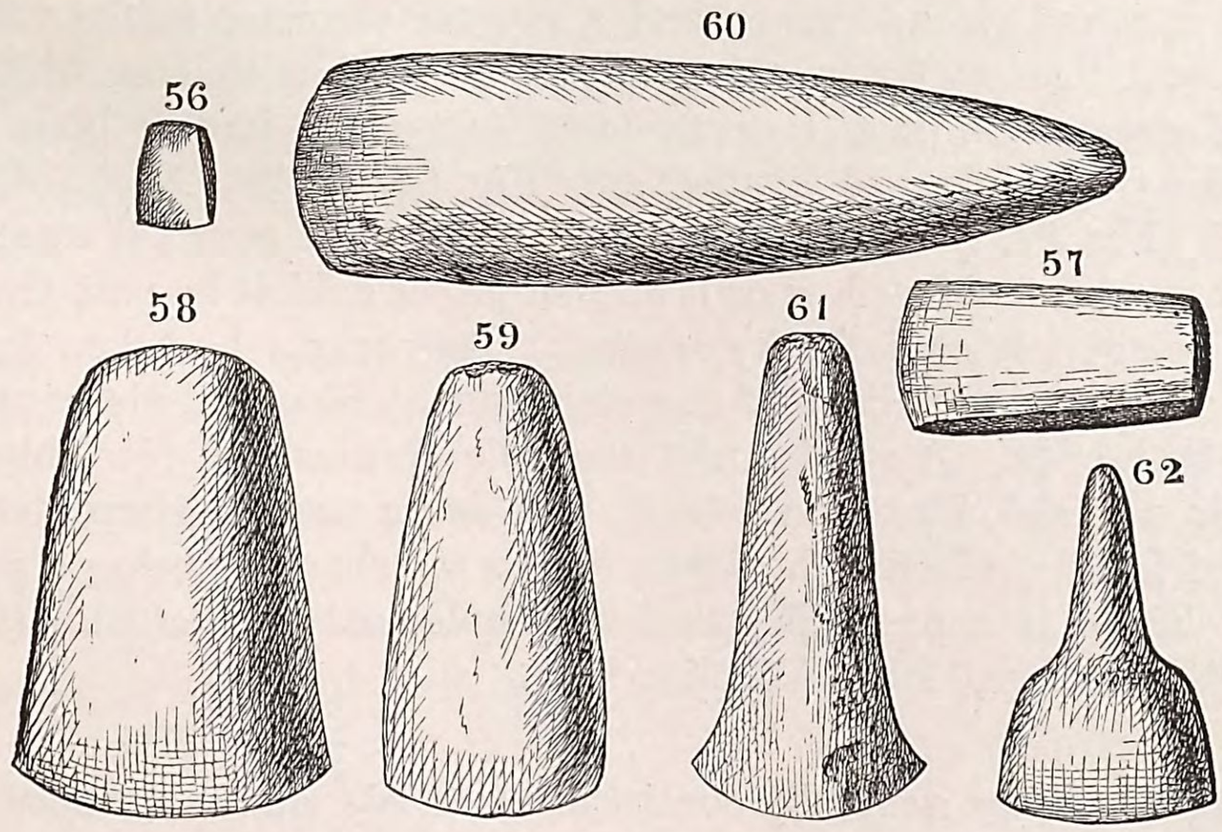
[4] The locality is described in Squier's "Antiquities of the State of New York," Buffalo, 1851, p. 126.

The lower portion is often smoothed by wear. These implements, like the preceding kind, probably were attached to handles and used in digging the ground for agricultural and other purposes. Both varieties consist of corresponding materials, and sometimes occur together in mounds and subterranean deposits.

14. Wedge or Celt-shaped Implements.—They consist mostly of silicious materials, and bear some resemblance to the rough-hewn flint celts of Northern Europe.

B. PECKED, GROUND AND POLISHED STONE.

1. Wedges or Celts.[5]—They form a numerous class of North American implements, occurring on the surface of the soil and occasionally in mounds, and were doubtless applied to different uses for which their shape and size suited them. They are sometimes rudely pecked or chipped into form, and merely sharpened at the cutting edges; but in general they are entirely ground, and not a few of them exhibit a beautiful polish. Their length varies from an inch and an inch and a half to a foot and more. They consist of different kinds of stone, such as diorite, syenite, hornblende rock, serpentine, etc., and even soft slates have sometimes furnished their material.[6] Occasion-



CELTS ($\frac{1}{4}$).

ally specimens made of silicious varieties (hornstone, jasper, lydite) are met, and very small celts consisting of hematite occur in different parts of the

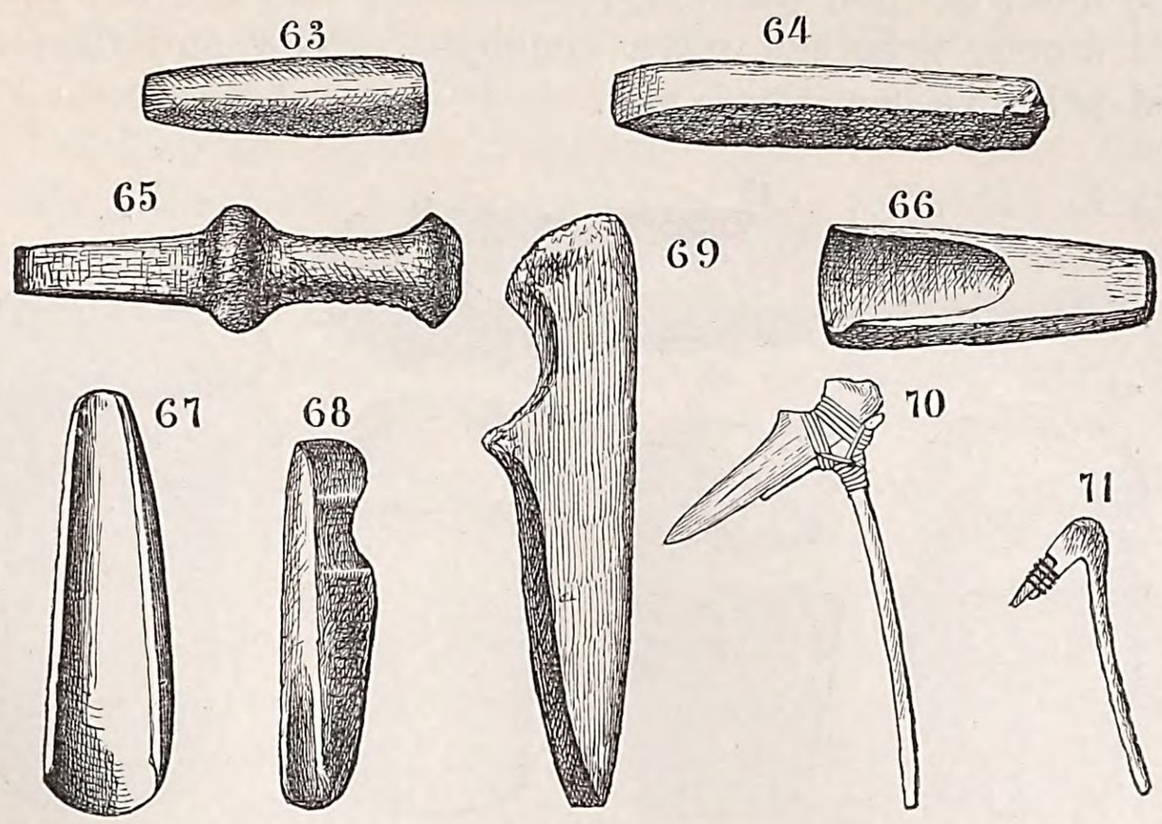
[5] From the Latin word *celtis* or *celtes*, a chisel.
[6] In Mexico celts of jade are not unfrequent.

United States. They are sharp-edged and highly polished, and were evidently used for cutting purposes (Fig. 56 represents one of these diminutive hematite tools, which was found in Ohio). A cross section parallel with the cutting edge of a North American celt presents in general a roundish or oval outline; but some specimens are four-sided, insomuch that a section would resemble a rectangle with sharp or rounded angles and more or less convex sides (Fig. 57, greenstone, Indiana). The cutting edges, nearly always ground from both sides, are usually convex, and rarely straight. The butt-ends generally exhibit more or less rounded contours (Fig. 58, syenite, Illinois; Fig. 59, greenstone, Tennessee); but in some specimens the butt tapers and terminates in a blunt point (Fig. 60, indurated chlorite slate, Tennessee, mound). Some have expanding cutting edges (Fig. 61, Louisiana). The butts of many celts are much battered, as though the implements had been employed in connection with mallets for splitting wood, etc.; others bear the traces of having been inserted in shafts to serve as axes or adzes. In rare cases the extremity opposite the edge terminates in a sort of a handle (Fig. 62, greenstone, North Carolina). A few specimens of the collection have a cutting edge at each end.

2. Chisels.—Wedge-shaped implements of elongated form and comparatively small size have been classed as chisels, and doubtless were used as such. It does not seem that they are abundant. Several specimens of the collection have a round circumference and a greater diameter in the middle or at the blunt end than at the working edge. These implements, which chiefly consist of greenstone, may be considered as typical, having been found in Ohio, Indiana, Virginia, and Connecticut (Fig. 63, diorite, Ohio). Others are four-sided (Fig. 64, lydite, New York), or flat with rounded smaller sides, and a few specimens of yellow or brownish jasper exhibit in part the original chipping, being only superficially ground. They might be taken for Danish or North German productions of the stone age. Some chisels have working edges at both ends. A specimen of the collection marked "ice-chisel" (Fig. 65, basaltic material, Unalaska Island) presents a peculiar shape, terminating in a sort of handle, which is, however, almost too short for being conveniently grasped. There is a possibility that the implement was hafted. (Compare: Nilsson, "Stone Age," Plate VI, Fig. 135).

3. Gouges.—They generally consist of materials similar to those of which celts are made; but they occur in the United States far less frequently than the latter, and appear to be chiefly confined to the Atlantic States. It is supposed that they were employed, besides other uses, in the manufacture of wooden canoes and mortars, which the aborigines hollowed out with the assistance of fire. The gouges were well adapted, by their shape, for removing the charred portions of the wood. These implements vary in length from three inches to a foot. In some the concavity is confined to the lower part (Fig.

66, dark hornstone, New York); in others it extends through their whole length (Fig. 67, Pennsylvania). There are implements which, though exhibiting no concavity, somewhat partake of the character of gouges. They can be likened to celts in which the edged portion is plano-convex, so as to produce a hollow cut. They may, in part, have served as adze-heads. Certain



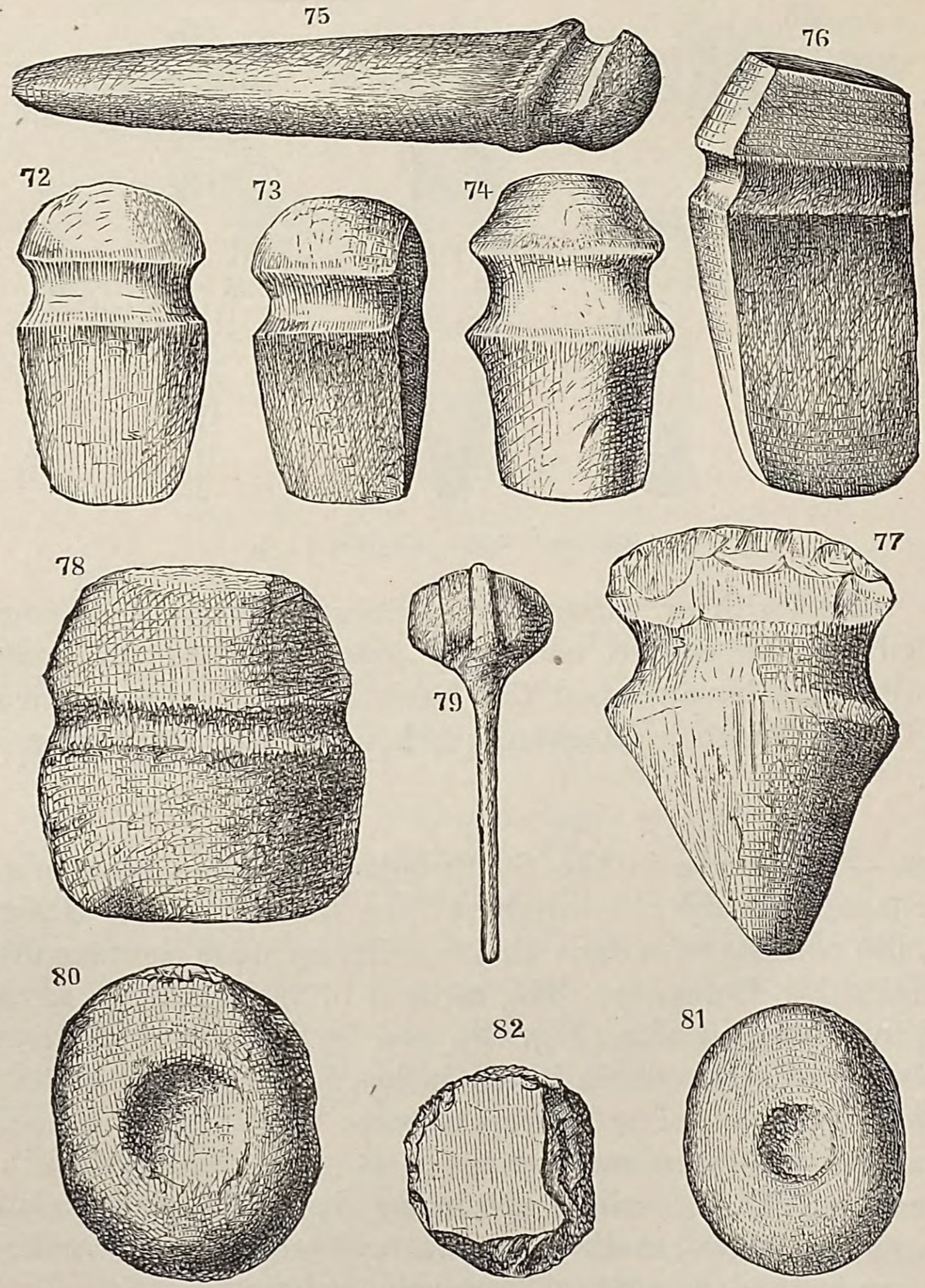
CHISELS, GOUGES AND ADZES ($\frac{1}{4}$).

gouge-like tools (with or without concavities at the cutting edge), which are provided on the convex side with grooves, ridges, or conical elevations, likewise may have formed the heads of adzes, the contrivances just mentioned facilitating their attachment to handles (Fig. 68, greenstone, Massachusetts).

4. Adzes.—There are in the Smithsonian collection some unmistakable adzes—perhaps not very old—derived from the Northwest Coast. One of them (Fig. 69) consists of a dark kind of silicious stone (hornstone), and was obtained in British Columbia. The method of hafting these implements is exemplified by a handled adze (Fig. 70) used by the natives of Oregon. The head, consisting of greenstone, is ten inches long, and connected with the wooden handle by means of split twigs of some flexible kind of wood. There are in the collection other adzes from the Northwest Coast, hafted in a different manner (Fig. 71). In these specimens the small adze-heads of green serpentine are celt-shaped, and rest against a shoulder of the crooked handle, where they are secured by strips of raw-hide, or by cord.

5. Grooved Axes.—Owing to their frequency, these implements may be counted among the best-known relics of the aborigines; and especially in the rural districts of the older States "Indian stone tomahawks" are familiar objects. In general they can be defined as wedges encircled by a groove,

usually nearer the butt-end than the edge. The groove served for the reception of a withe of proper length, which was bent around the stone head until both ends met, when they were firmly bound together with ligatures of hide or some other material. The withe thus formed a convenient handle. These axes are frequently made of varieties of greenstone, though specimens consisting of syenite, granite, porphyry, sandstone, etc., are not rare; silicious materials, it seems, were not often employed. Now and then a specimen made of red or brown hematite is met.



GROOVED AXES, HAMMER-HEADS AND HAMMER-STONES.
(Figs. 72–77: $\frac{1}{4}$; Figs. 78 and 80–82: $\frac{1}{3}$.)

Grooved axes differ much in size, the smallest in the collection (probably toys) measuring little more than two inches in length and weighing from three to four ounces, while the largest object of this class, a specimen from Illinois (loaned), is thirteen inches long, seven and a half wide, and weighs

twenty pounds and a half. Such large tools hardly could be wielded with two hands; yet they must have been employed in some way, their edges exhibiting distinct marks of wear. In general the axes are from five to seven inches long, weighing one and a half or two pounds. In some axes the groove surrounds the stone entirely (Fig. 72, greenstone, Massachusetts), but in others, as it were, only on three sides, the fourth side being flat, and sometimes even slightly hollowed, apparently for resting on a corresponding flat part of the handle (Fig. 73, greenstone, Arizona). The groove is often barely indicated, but deep and regular in the specimens of the better class, which are symmetrically shaped and well smoothed, or even polished. A few specimens exhibit two parallel grooves. The most finished Smithsonian axes, consisting of a dark compact greenstone, are derived from Arizona.

The grooved axes, though corresponding in general form, present many varieties. Their grooves, for instance, are sometimes bounded by ridges, obviously for the purpose of preventing the withe from slipping (Fig. 74, greenstone, South Carolina). In a number of specimens the groove runs obliquely around the stone, which thus evidently formed an acute angle with the handle (Fig. 75, cast, Wisconsin; a specimen of unproportionate length). In rare cases the axes are four-sided, the butt-end terminating in a quadrilateral face (Fig. 76, greenstone, Alaska). In general, however, the butt-ends present rounded contours, and often bear unmistakable traces of violent use. Now and then they are bluntly pointed. The collection contains a few axes with edges at both extremities. Occasionally there occur specimens with remarkably narrow edges (Fig. 77, graywacke, Pennsylvania).

The tools just described are not sharp-edged, and consequently were not used in cutting down trees, but they served for deadening them by the well-known process of "girdling." When the trees had become perfectly dry, they were felled by the application of fire, the axes being again resorted to for removing the charred wood. For the same purpose they may have been employed in the manufacture of wooden canoes. Specimens of small or medium size doubtless were used as battle-axes, like the iron tomahawk of modern times.—No. 7253 of the collection is a cast of the "inscribed" grooved axe found in 1858 on the farm of Samuel R. Gaskill, in Burlington County, New Jersey.

6. Hammers.—They comprise hammer-heads and hammer-stones. The former consist of round or oval pebbles, or small boulders of quartzite, granite, greenstone, and other hard and tough materials, and often show no other modification by the hand of man but a groove for the attachment of a handle. Some, however, are artificially brought to the required shape. The groove, it should be stated, is not always carried entirely around the stone. Hammer-heads vary much in size, the smallest specimens measuring only a few inches, while the large ones, designated as mauls, are so bulky and heavy that they could only have been wielded with both hands (Fig. 78, granite, Colorado; eleven pounds). Very large mauls with one or two grooves, sometimes with-

out any groove, have been discovered in the ancient copper mines of the Lake Superior region. They were the tools employed by the aborigines for obtaining the much-valued virgin metal. Some hammer-heads were evidently converted into their present forms from grooved axes whose edges had been damaged by fracture or by constant use. There are in the Smithsonian collection some hafted mauls derived from the Sioux and Assineboins, who still use them for breaking bones, pounding pemmican, etc. (Fig. 79, quartzite, Assineboins; two pounds). These tools, including their handles, are tightly cased in raw-hide, excepting that part of the head which is used for striking. One of these modern handled mauls, derived from the Sioux, is rather heavy, weighing more than nine pounds. The Blackfeet, Sioux, and other still existing tribes sometimes use war-clubs with stone heads. The latter, consisting of quartzite, greenstone, etc., are of a more or less elongated regular egg-shape, well polished, and deeply grooved around the middle for the attachment of the handle. Specimens of this class and of others are in the collection. The different kinds of stone war-clubs in use among the Indians of our time will be described hereafter.

The tools designated as hammer-stones are mostly roundish or oval pebbles of a somewhat compressed or flattened form, presenting in their side view the outline of a more or less elongated ellipse. Quartzite appears to be the prevailing material. Their only artificial alteration consists in two pits or cavities, which form the centres of the opposite broad sides of the pebble. In these cavities the workman placed the thumb and middle finger of the right hand, while the forefinger pressed against the upper circumference of the stone (Fig. 80, quartzite, New York; Fig. 81, quartzite, Pennsylvania). In some instances the depressions are so shallow that they almost escape observation, though specimens with deep and well-defined cavities are not rare. Many hammer-stones bear distinct traces of rough use, being battered and bruised at the circumference. Their longitudinal diameter generally measures from three to five inches, and they may average about a pound in weight.

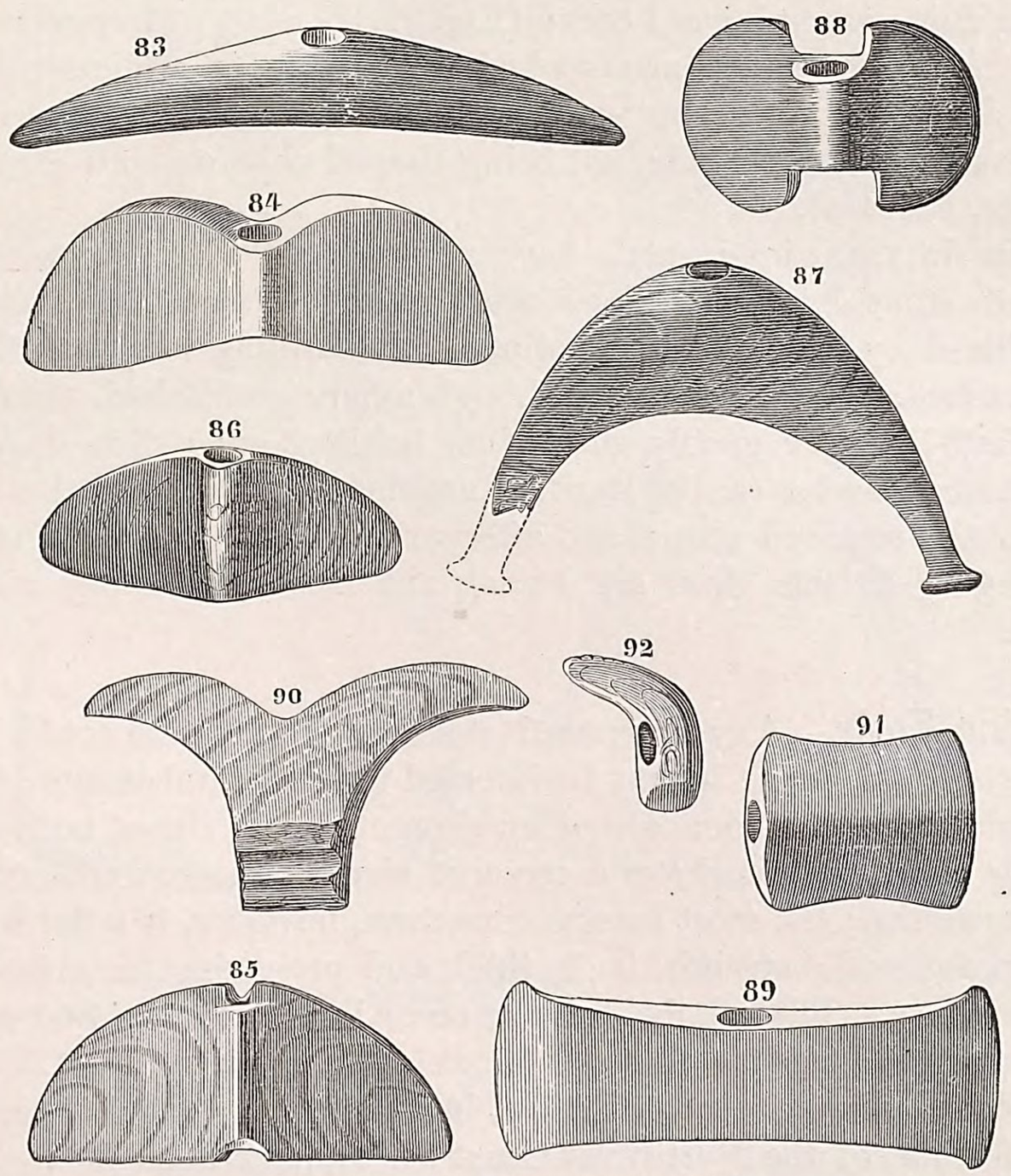
In Europe similar hammer-stones occur, which have been called *Tilhuggersteene* by Danish archæologists, and it has been conjectured that they were used as tools for chipping weapons and implements of flint. It cannot be doubted that the corresponding American implements served as hammers, since they show the most distinct traces of violent contact with hard substances, and there is much probability that they were used in blocking out flint implements; yet they are by far too clumsy, and possess too much roundness on all sides, to have been the tools for finishing barbed arrow-heads and other delicate articles of flint. Quite different implements were employed in that operation.[7]

---

[7] There are in the National Museum several of the tools employed by modern Indians in the manufacture of stone arrow-heads, perforators, etc. These chipping-implements consist of bluntly pointed rods of deer horn, from eight to sixteen inches in length, or of short slender pieces of the same material bound with sinew to wooden sticks resembling arrow-shafts. The aboriginal "arrow-maker" holds in his left hand the flake of flint or obsidian on which he intends to operate, and presses the point of the tool against its edge, detaching scale after scale, until it assumes the desired form.

There are other quartzite hammer-stones, often of rather irregular shape, in which the cavities are wanting. They have undergone no alteration, excepting that resulting from constant use. A peculiar class of hammer-stones consists of flint pebbles roughly worked into a roundish flattened form. Their battered circumferences indicate the use to which they were applied (Fig. 82, flint, Ohio). Though not in reality belonging to the series of pecked or ground implements, it has been thought proper to mention them in this place. —Certain stones resembling the indented hammer-stones, and often classed with them, evidently were used for other purposes. They will be noticed in connection with mortars.

7. Drilled Ceremonial Weapons.—The grooved tomahawk was among the aborigines, prior to the occupation of the country by Europeans and their descendants, the prevailing implement of the axe kind; but pierced axe and



DRILLED CEREMONIAL WEAPONS ($\frac{1}{3}$).

pick-shaped objects also occur, though not in great abundance. These relics are for the most part elegantly and symmetrically shaped, and well polished, but of such small dimensions that they cannot have been applied to any prac-

tical use. Their material, moreover, generally consists of soft kinds of stone, more particularly of a gray or greenish slate, which is frequently marked with dark parallel or concentric stripes or bands. Yet specimens made of jasper, ferruginous quartz, syenite, and other hard substances are not wanting. The objects in question doubtless were provided with handles and worn as weapons of parade or insignia of rank by the superiors. They present a great variety of forms, bearing testimony to the ingenuity and good taste of their makers. Many of them somewhat resemble double pick-axes (Fig. 83, serpentine, Virginia; Fig. 84, serpentine, Pennsylvania; Fig. 85, striped slate, Wisconsin; Fig. 86, striped slate, Indiana; Fig. 87, striped slate, Pennsylvania); some are egg-shaped, and others may be likened to axes with two very blunt cutting edges (Fig. 88, cast, original probably brown jasper, Louisiana;[8] Fig. 89, cast, Wisconsin). In rare cases the parts, which would form the cutting edges in real implements are bifurcated (Fig. 90, striped slate, fragment; Indiana), and in some objects here classed as ceremonial weapons the sides corresponding to edges exhibit a slight inward curve (Fig. 91, translucent ferruginous quartz, Indiana). A few specimens are crooked, terminating in a blunt point at one extremity, and in a rounded butt-end at the other. These specimens are exceptions from the general rule, not being shaped alike on both sides (Fig. 92, striped slate, Indiana).

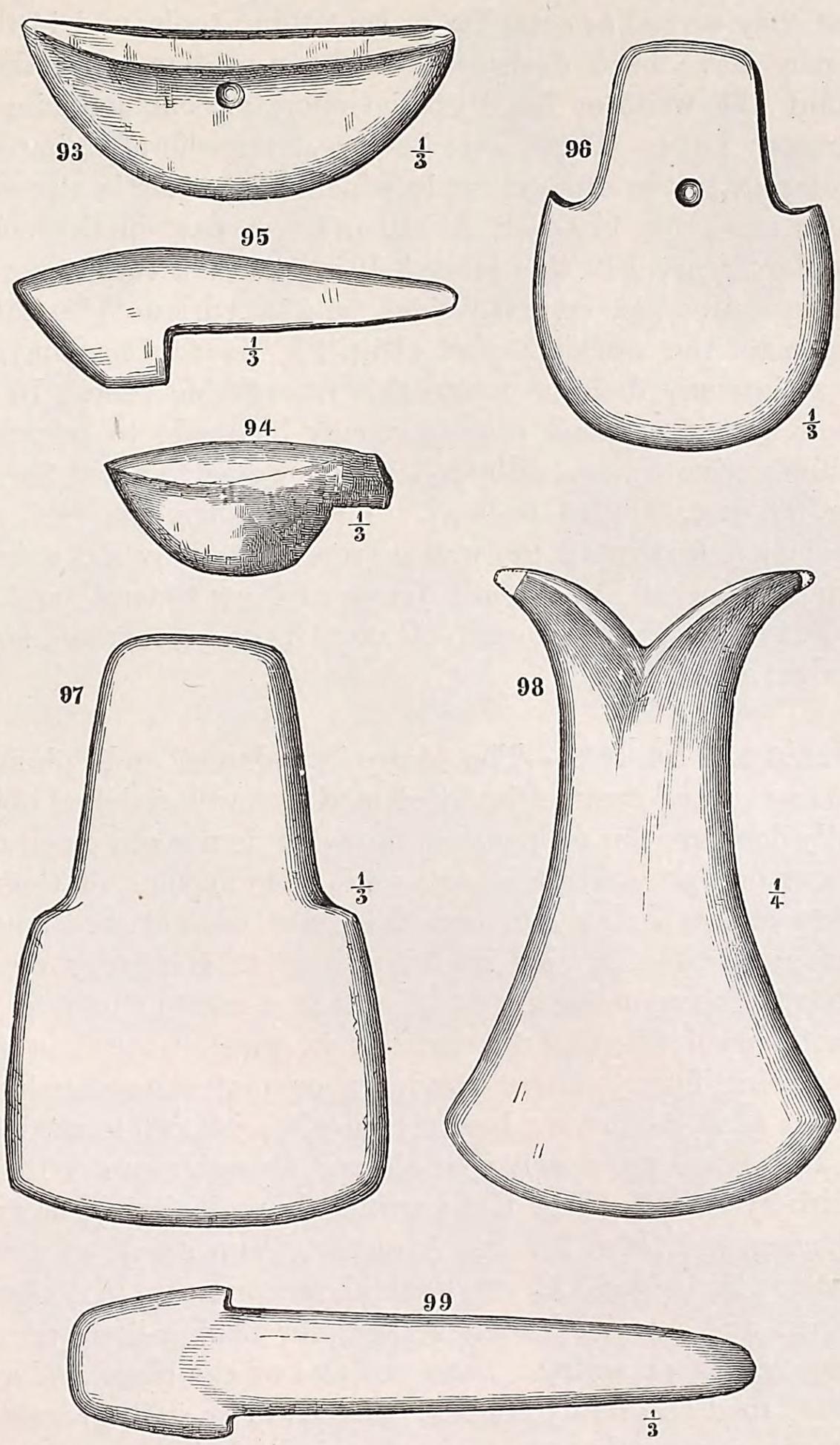
The holes in these implements have no sufficient width for permitting the insertion of stout handles. They are perfectly regular, and the annular striæ produced by the revolving motion of the drilling tool can often plainly be distinguished. Some specimens, though otherwise finished, are either destitute of shaft-holes, or merely show their beginnings: a fact demonstrating that in North America (as in Europe) articles of this description were first brought to the required shape, and afterward drilled. On the whole, the objects belonging to this class are among the most interesting relics of the aborigines.

8. Cutting Tools.—Any sharpened stone of suitable size could be used as a cutting tool, and hence it may be inferred that the implements of this class assume various forms. Some are of an elongated oval shape, both ends forming cutting edges; others have a crescent shape and vertical cutting edges at both extremities; the most conspicuous form, however, is a flat knife with a semi-lunar edge and a straight back, thick and projecting for greater convenience in handling. These knives chiefly occur in the Eastern States, and their prevailing material is slate (Fig. 93, black slate, Pennsylvania). Yet somewhat similar tools, less defined in shape, but likewise made of slate, were used by the aborigines of the Northwest Coast for ripping open fish. There is in the collection a well-defined cutting tool with a curved edge and a lateral tang,

---

[8] A beautiful specimen in the collection, exhibiting the shape of Fig. 88, though less elegant in outline, consists of a translucent ferruginous quartz of a pale reddish color. It was found, together with the original of Fig. 91, in Indiana, ten feet below the surface of the ground.

probably serving for the attachment of a handle (Fig. 94, hard red shale, Pennsylvania). Another specimen bearing some resemblance to that just described is provided with a handle of convenient length (Fig. 95, cast, Indiana).



CUTTING TOOLS, SCRAPER AND SPADE-LIKE IMPLEMENTS.

9. Scraper and Spade-like Implements.—There is a class of well-finished flattish implements, usually made of compact greenstone, which are formed into a semi-lunar edge on one side, and terminate on the other in a nearly

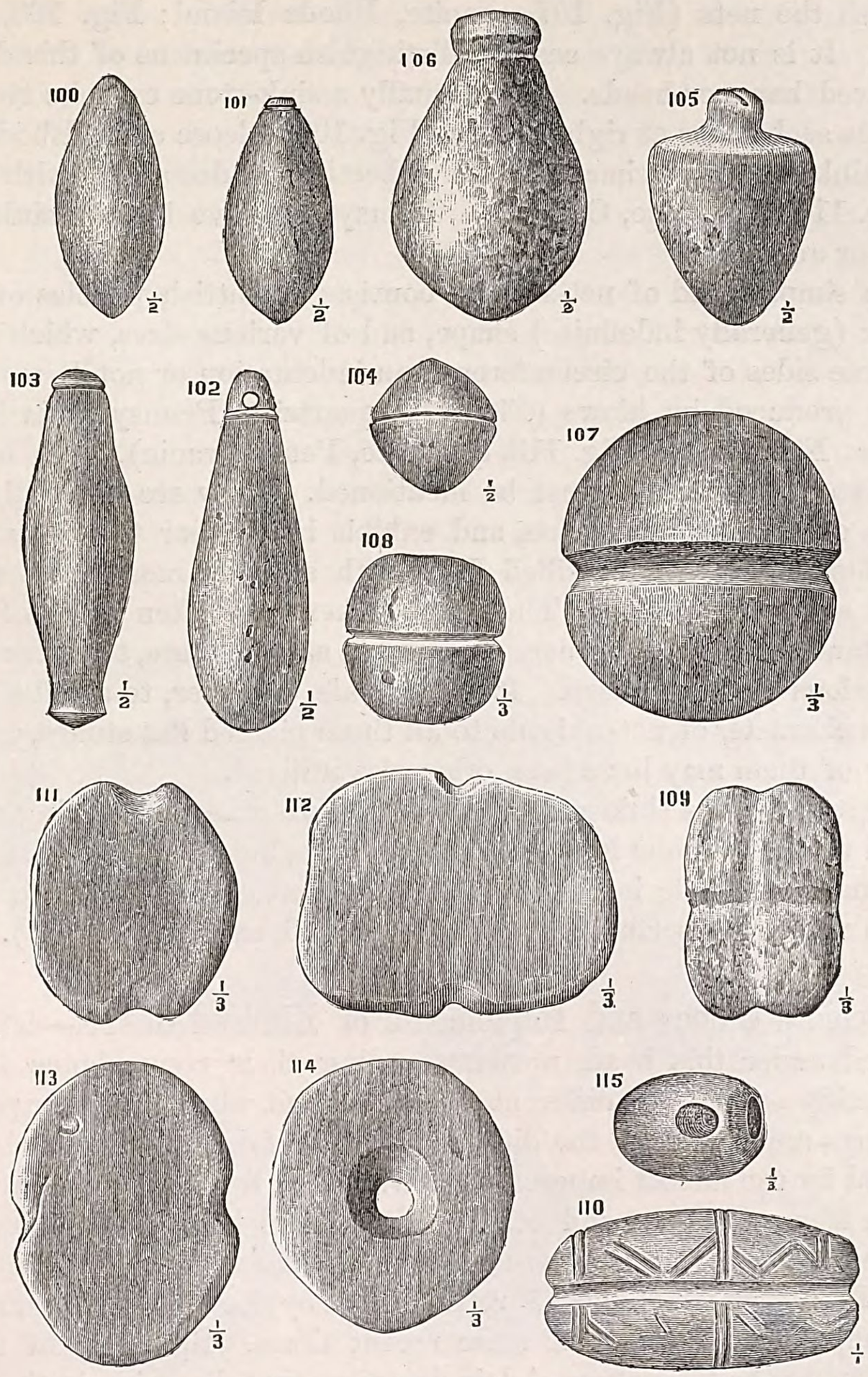
straight-sided handle; a perforation marks the place where the handle and the curved part of the implement meet (Fig. 96, greenstone, Kentucky). These typical objects have been classed as axes, though the smoothness of their edges seems to indicate a different mode of application. It appears more probable that they served as scraping or smoothing tools, and in this case the perforation may have been designed for the reception of a thong, which, passing around the wrist or hand of the operator, enabled him to use the tool with greater force. There are, however, unperforated implements apparently belonging to the same class, in which the handle is almost too broad for convenient use (Fig. 97, cast, Arkansas). A cast in the collection deserves particular mention in this place. It is that of a very large tool with a rounded much-used edge, concave sides, and a curious bifurcation at the extremity opposite the working part (Fig. 98, South Carolina). It is not intended to assign any definite use to this remarkable relic. In connection with the tools just mentioned reference may be made to others somewhat resembling diminutive spades, although it is not asserted that they were used as such (Fig. 99, cast, South Carolina). These implements seem to be rare. The best specimen known to the writer (represented by a cast in the collection) is in possession of Dr. Joseph Jones, of New Orleans, and was found by him in a Tennessee grave-mound. It consists of greenstone, and measures seventeen inches and a half.[9]

10. Pendants and Sinkers.—The names "pendants" and "plummets" have been given to a class of symmetrically shaped and well-finished objects, which were evidently designed for suspension, though it is not quite certain for what special purpose or purposes they were used. On account of their shape and the pains bestowed on their production they have been classed among aboriginal ornaments; yet the former inhabitants of this country devoted much time and labor to the manufacture of objects of a useful character, and hence it appears not improbable that the articles in question were, in part at least, weights for fishing-lines. These pendants or plummets usually consist of hard materials, such as red or brown hematite, jasper, ferruginous quartz, greenstone, etc. Some are nearly pear-shaped, though more or less elongated, and either entirely smooth (Fig. 100, hornblende rock, Ohio), or grooved near the more tapering end (Fig. 101, red hematite, Tennessee), or pierced with a hole at the same place (Fig. 102, amygdaloid, Arkansas). It is significant that similarly shaped and pierced leaden sinkers for fishing-lines are sold in the hardware stores of this country. Some articles of the class under notice exhibit more developed and really elegant outlines (Fig. 103, greenstone, Ohio). A few specimens, apparently partaking of a kindred character, are of a double conoid form (Fig. 104, greenstone, California). Another of the many varieties expands at the upper end and terminates in a knob (Fig. 105, quartzite, Massachusetts).

---

[9] Figured in "Antiquities of the Southern Indians," by Charles C. Jones, Plate XVII, Fig. 2.

Specimens worked with less care are not wanting, and among them may be mentioned a variety of an irregular roundish or oval shape, and characterized by a knob at the upper end (Fig. 106, greenstone, Massachusetts). There is



PENDANTS AND SINKERS.

much probability that they served for sinking nets. Some Smithsonian specimens of this description are half a foot long and weigh more than three pounds. The character of net-sinkers appears more distinct in the types following next, to which, indeed, that use has been ascribed by common con-

sent, based upon the fact that net-weights of corresponding shapes are still employed by primitive races of man. Some are roundish stones of various sizes, either worked or left in their natural state, and grooved around the middle for fastening the strings or thongs by means of which they were connected with the nets (Fig. 107, granite, Rhode Island; Fig. 108, potstone, Georgia). It is not always easy to distinguish specimens of this description from grooved hammer-heads. Occasionally a sink-stone exhibits two grooves which cross each other at right angles (Fig. 109, talcose slate, Rhode Island). A small sinker-like specimen of the collection is decorated with engraved lines (Fig. 110, sandstone, Oregon). It may not have been a sinker, but an ornament or an amulet.

A more simple kind of net-sinkers consists of flattish pebbles of roundish or angular (generally indefinite) shape, and of various sizes, which exhibit on two opposite sides of the circumference an indentation or notch, more or less deep, and produced by blows (Fig. 111, quartzite, Pennsylvania; Fig. 112, graywacke, New York; Fig. 113, quartzite, Pennsylvania).[10] In conclusion, the perforated net-sinkers must be mentioned. They are generally made of flat stones of a roundish outline, and exhibit in or near the centre a rather large perforation, which is drilled from both sides in most cases (Fig. 114, micaceous slate, California). These net-sinkers are often made of potstone, as, for instance, in Georgia, where they mark, as elsewhere, the sites of former fishing stations of the Indians. It is not safe, however, to ascribe indiscriminately the character of net-weights to all these pierced flat stones, considering that many of them may have been otherwise utilized.

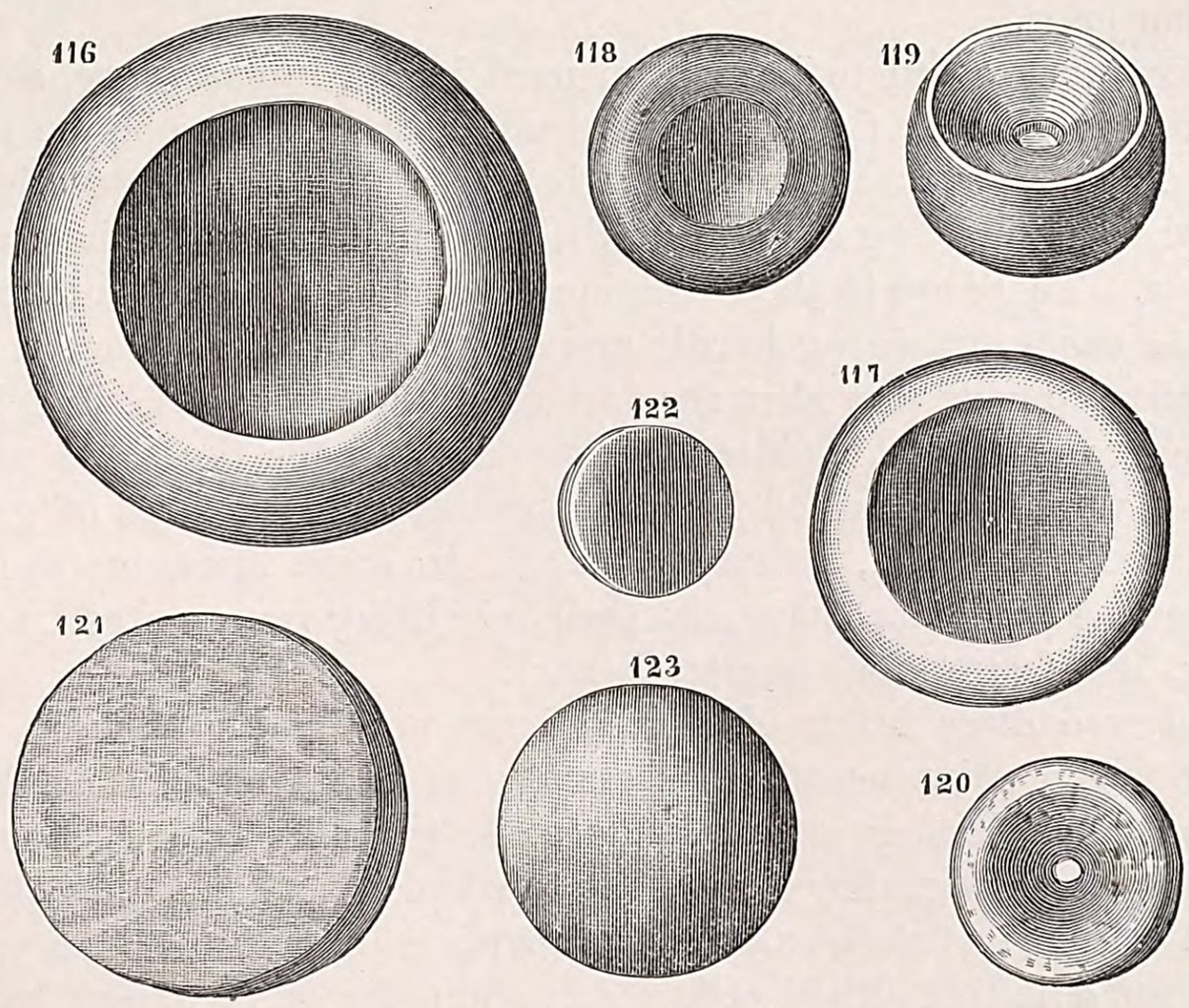
Much rarer than the sinkers just mentioned are others consisting of pebbles perforated with an oblique hole, not in the centre, but nearer the circumference of the stone. The hole is drilled from two sides, and generally forms an obtuse angle where the perforations meet (Fig. 115, sandstone, Ohio).

11. Discoidal Stones and Implements of Kindred Shape.—The articles enumerated under this head, notwithstanding their resemblance in general form, probably served for different purposes; but what these purposes were, is not always apparent, and the difficulty of classifying the objects in question is enhanced by the almost imperceptible transition from one form into another. Adair, Du Pratz, Lawson, and other early writers have described an Indian game, in which many of the so-called discoidal stones may have been employed. That game is likewise referred to by Lewis and Clarke, Catlin, Murray, and other travelers of more recent times. Speaking of the games in vogue among the Cherokees, Adair describes that diversion in the following words:

"The warriors have another favorite game called *Chungke*, which, with propriety of language, may be called 'Running hard labor.' They have near

[10] The writer has seen specimens with four and more indentations.

their state-house a square piece of ground well cleaned, and fine sand is carefully strewed over it, when requisite, to promote a swifter motion to what they throw along the surface. Only one or two on a side play at this ancient game. They have a stone about two fingers broad at the edge, and two spans round; each party has a pole of about eight feet long, smooth and tapering at each end, the points flat. They set off abreast of each other at six yards from the end of the play-ground; then one of them hurls the stone on its edge, in as direct a line as he can, a considerable distance toward the middle of the other end of the square; when they have ran a few yards, each darts his pole anointed with bear's oil, with a proper force, as near as he can guess in proportion to the motion of the stone, that the end may lie close to the stone; when this is the case, the person counts two of the game, and, in proportion to the nearness of the poles to the mark, one is counted, unless by measuring, both are found to be at an equal distance from the stone. In this manner the players will keep running most part of the day, at half speed, under the violent heat of the sun, staking their silver ornaments, their nose, finger, and ear-rings; their breast, arm, and wrist-plates, and even all their wearing apparel, except that which barely covers their middle. All the American Indians are much addicted to this game, which to us appears to be a task



DISCOIDAL STONES ($\frac{1}{3}$).

of stupid drudgery; it seems, however, to be of early origin, when their forefathers used diversions as simple as their manners. The hurling-stones they use at present were, time immemorial, rubbed smooth on the rocks, and with prodigious labor; they are kept with the strictest religious care from one

generation to another, and are exempted from being buried with the dead. They belong to the town where they are used, and are carefully preserved."[11]

There are several kinds of discoidal stones which may have served in the Chung-kee game. Some are quite large, measuring six inches and more in diameter, and bearing a very regular dish-shaped cavity on each side. Their material is often a beautiful (sometimes translucent) ferruginous quartz, and specimens made of this mineral appear to be more numerous in Tennessee than in other States of the Union. The roundness and general regularity of many objects of this class hardly can be surpassed, and not few of them are beautifully polished. In some the outer circumference appears more or less convex, though straight-sided specimens are not wanting (Fig. 116, yellow-brown ferruginous quartz, Tennessee; Fig. 117, brown ferruginous quartz, Tennessee; Fig. 118, dark greenstone, mound in Illinois). In a number of the stones, supposed to have been used in the Chung-kee game, the cavities on both sides are carried somewhat deeper than in the preceding kind, and their centre is marked by a perforation (Fig. 119, cast, Ohio; Fig. 120, quartzite, Ohio). These central holes sometimes attain a comparatively large size, imparting to the objects a ring-like character, in which cases it is impossible to state, with any plausibility, whether the specimens, which are, moreover, often somewhat rudely shaped, served as Chung-kee stones, as net-sinkers, or for other purposes.

Some stones, supposed to have been used in the Indian game, show flat or slightly convex circular faces, and perpendicular or even oblique circumferences (Fig. 121, quartzose stone, Georgia).[12] Stones of this description have been called "weights," on account of their resemblance to the iron weights in common use. There are in the collection similarly shaped stone discs of small size, in some cases measuring hardly more than an inch in diameter. Though too diminutive to have served in the Chung-kee game as practised by adults, it is not improbable that children employed them for the same purpose, if, indeed, they were not designed for an altogether different kind of game (Fig. 122, argillaceous material, Pennsylvania).[13] In some instances the discoidal stones assume a lenticular shape, the periphery being represented by a rounded edge (Fig. 123, ferruginous quartz, Texas).

The hollowed discs before described have now and then been taken for mortars in which paint or other substances were pulverized, and the appearance of the concavities in a few lends some probability to that supposition. In those cases, however, they were made to serve a secondary purpose. Specimens with convex or flat faces, again, probably were often utilized as mealing-stones, or for grinding other substances, and some of them may have originally been fashioned for such ends.

The discoidal stones of the perforated kind pass over by slow degrees into

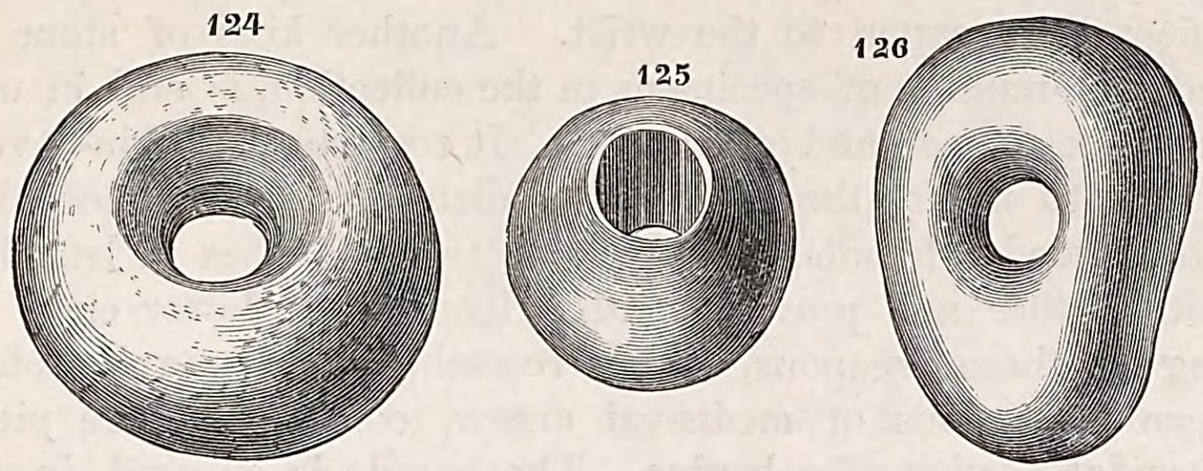
---

[11] Adair: History of the American Indians, London, 1775, p. 401.

[12] See Du Pratz: Histoire de la Louisiane, Paris, 1758, Vol. III, p. 2.

[13] Somewhat similar discs, made of broken clay vessels, are often found on the sites of Indian settlements.

the ring-form, a type exemplified by a large number of specimens obtained from the Californian islands forming the Santa Barbara group. These rings, composed of sandstone, serpentine, potstone, etc., vary much in size and character of workmanship. Some are not more than an inch and a half in diameter, others measure as much as five inches. There are flat specimens not



CLUB-HEAD-SHAPED STONES ($\frac{1}{3}$).

exceeding half an inch in thickness, while others are massive, presenting a more or less compressed globular form. There is also much difference in the width of the perforations, which are, however, smooth and round in most cases, though exceptionally of an oval shape. The great variety of forms exhibited in these perforated objects defies all attempts to assign to them anything like a definite use. The more bulky specimens somewhat bear the character of club-heads, and may have been employed as such.[14] Some are of a spherical or conoidal shape, and in the latter the perforation is drilled in the direction of the longer axis. In many the prominent part of the periphery bears the marks of rough use (Fig. 124, hornblende rock, Santa Catalina Island, California; Fig. 125, greenstone, Santa Rosa Island, California). A few of these specimens are of a flattened pear shape, the perforation running in the direction of the shorter axis (Fig. 126, serpentine, Santa Rosa Island).[15] The writer is not aware of the occurrence of such relics in the eastern or middle portions of the United States.

The collection in the Smithsonian Institution contains a series of globular and egg-shaped stones (mostly natural formations) of suitable size to represent

---

[14] It has also been suggested that they served as weights for digging-sticks.

[15] Through the agency of Mr. Paul Schumacher the National Museum has been enriched with a large number of valuable relics from the Californian islands of *San Miguel*, *Santa Cruz*, *San Nicolas*, and *Santa Catalina*, and from various points on the main-land, embraced in the Counties of San Luis Obispo and Santa Barbara. A place called *Dos Pueblos* in the last-named district has furnished many remarkable objects. The relics occurred in graves and on the surface. Many are evidently very old; others exhibit a more recent appearance, and some of these have been found in graves with articles of European manufacture (iron knives, objects of brass, beads of glass and enamel, etc.), proving that they are referable to the aborigines whom the whites found in possession of those islands and the neighboring coast. It has been thought proper to include these products of Indian art in the archæological series. The islands have been totally vacated by the Indians, the last of whom, ten in number, were removed, about forty years ago, to the Santa Barbara mission on *terra firma*. A few only are now and then seen in the neighborhood. Mr. H. H. Bancroft mentions in his work, entitled "The Native Races of the Pacific States," the names of some of the tribes formerly inhabiting the localities in question (Vol. I, p. 459, etc.). The graves of *Dos Pueblos*, it should be stated, were also explored by Dr. H. C. Yarrow.

club-heads, and the manner in which some of them, perhaps, were utilized, is illustrated by a number of weapons obtained from existing tribes. There is, for instance, a Sioux war-club with a round stone head about three inches in diameter, and a wooden handle nearly two feet long, the stone as well as the handle being enclosed in a tightly fitting covering of raw-hide sewed together with strong sinew. A loop at the end of the handle serves for attaching the weapon to the wrist. Another kind of stone war-club, represented by a number of specimens in the collection, is still in use among the Apaches, Shoshonees, and other tribes. It consists of a skin-covered stone ball, from two to nearly three inches in diameter, and connected by short thongs with a wooden handle, from eight to twelve inches in length, likewise covered with leather, and provided with a loop at the lower end. The raw-hide casing of these weapons, which resemble the "morning-stars" seen in European collections of mediæval armor, consists of one piece, taken from the caudal portion of a bovine. The handle is encased in the close-fitting skin of the animal's tail, a dangling tuft of its hair occasionally forming an ornamental appendage to the weapon.[16]

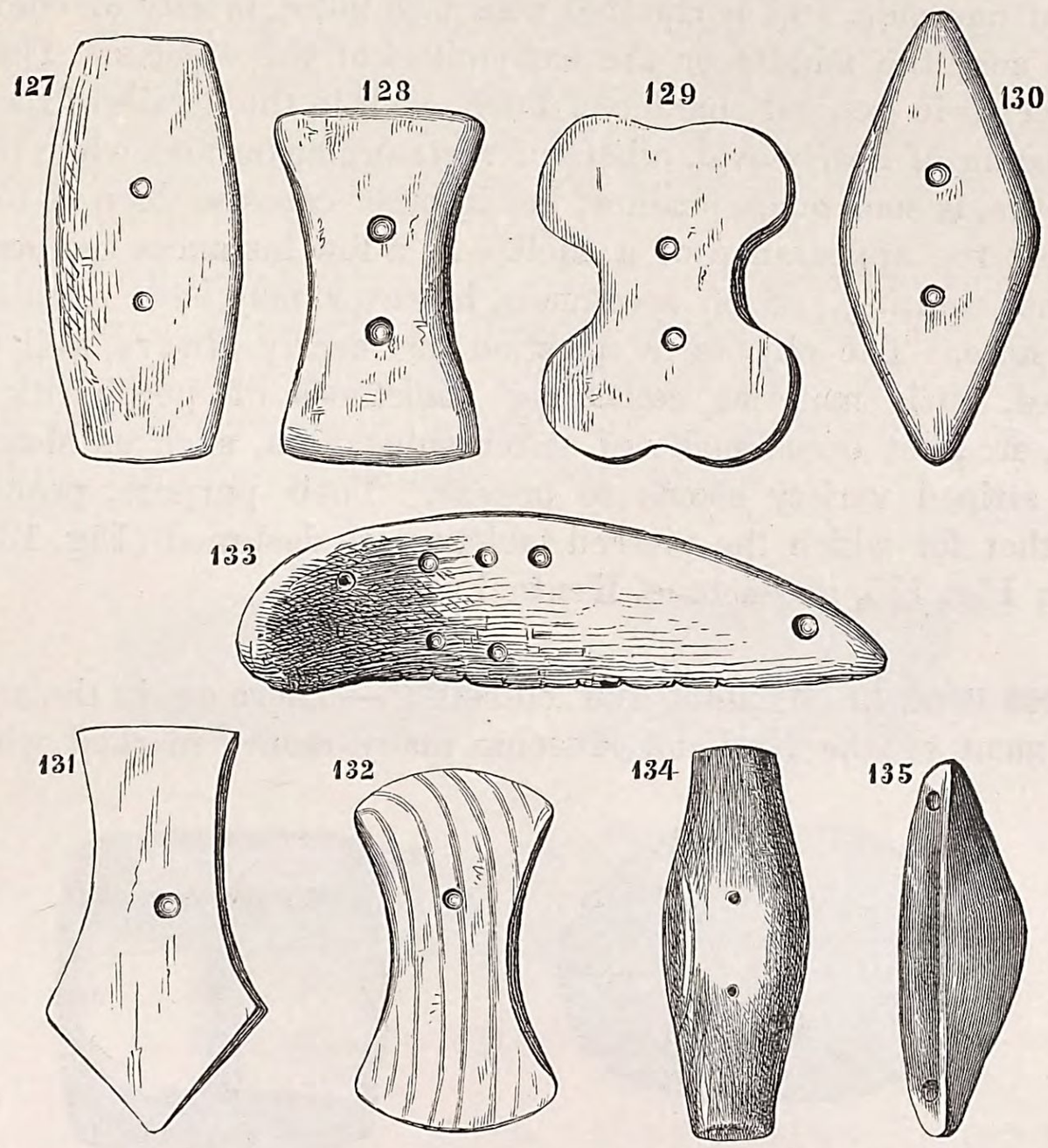
It may not be amiss to mention in this place certain stones of quartzite, etc., worked into a regular egg-shape, from two to three inches in longitudinal diameter, and slightly truncated at the more pointed end, so as to allow the stone to stand upright on its base. They may have been employed as club-heads, though it appears just as probable that they were used in some game, or perhaps as targets to be shot at with arrows for the sake of practice. Placed upright on a pole, they would fall down when touched by a missile. The specimens in the collection are all derived from Georgia.[17]

12. Pierced Tablets and Boat-shaped Articles.—A rather numerous class of aboriginal relics consists of variously shaped tablets of great regularity and careful finish, pierced with one, two, or more round holes. They are mostly made of slate, and the greenish striped variety before mentioned seems to have been preferred by the makers. A very common form is that of a rectangle, with sides exhibiting a slight outward curve. Other tablets are lozenge-shaped with inwardly curved sides, oval, cruciform, etc. Most of them have two perforations, though specimens with only one are not rare, while those that have more than two holes are of less frequent occurrence. The holes are drilled either from one side or from both, and, accordingly, of conical or bi-conical shape. They seldom have more than one-eighth of an inch in diameter. In some tablets the edges are marked with notches, which may be either ornamental, or designed for enumeration. (Fig. 127, slate, New York; Fig. 128, slate, Pennsylvania; Fig. 129, cast, Louisiana; Fig. 130, slate, Tennessee; Fig. 131, slate, Tennessee; Fig. 132, striped slate,

[16] The clubs here mentioned will be figured hereafter.

[17] These egg-shaped stones have been noticed in the "Antiquities of the Southern Indians" by Charles C. Jones.

Tennessee). Concerning the destination of the tablets nothing is definitely known. At first sight, one might be inclined to consider them as objects of ornament, or as badges of distinction; but this view is not corroborated by the appearance of the perforations, which exhibit no trace of that peculiar



PIERCED TABLETS AND BOAT-SHAPED ARTICLES ($\frac{1}{3}$).

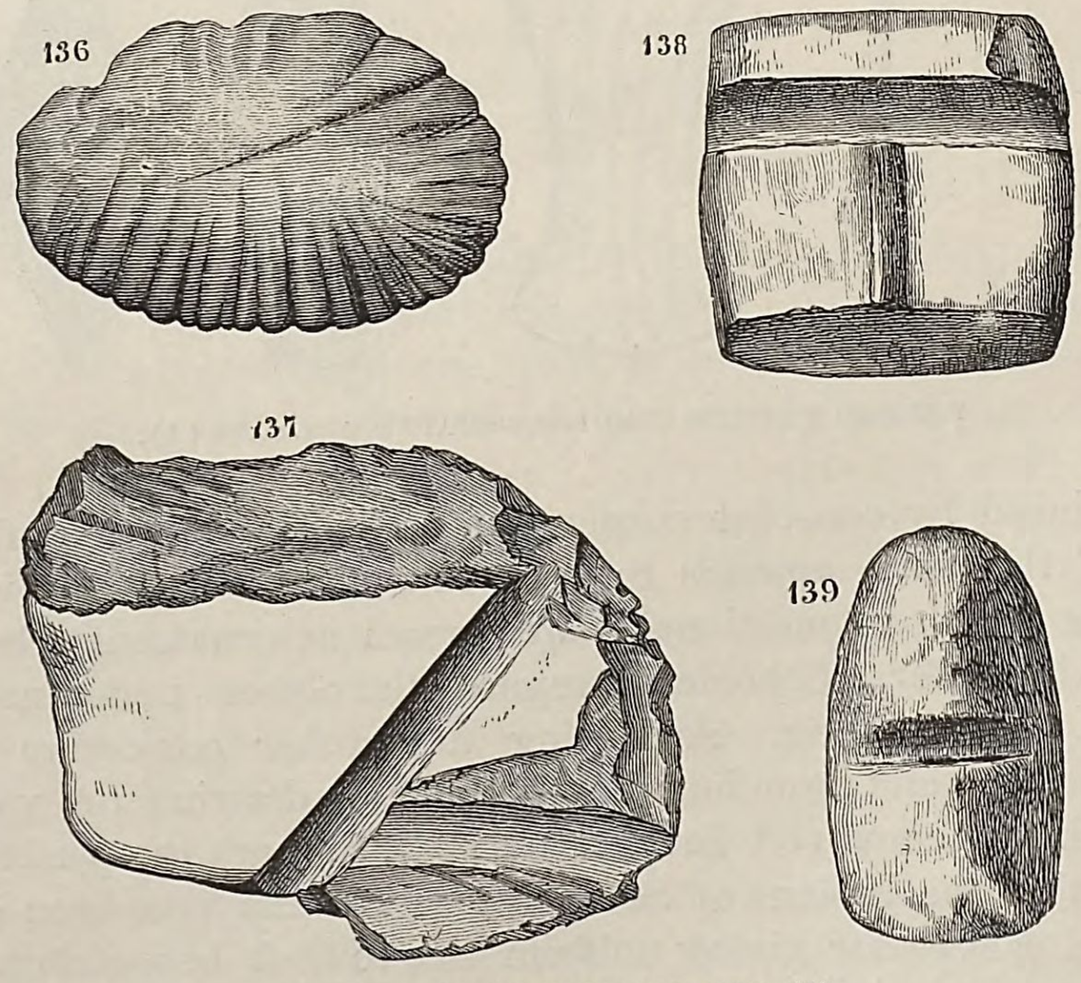
abrasion produced by constant suspension. The classification of the tablets as "gorgets," therefore, appears to be erroneous. There are, indeed, perforated tablets which unquestionably were worn as ornaments; but they will be considered hereafter. Schoolcraft regards the objects under notice as implements for twine-making. According to another conjecture they were used in condensing and rounding bow-strings, by drawing the wet strips of hide, or the sinews employed for that purpose, through the perforations. It is suggestive that the Indians of Southeastern Nevada have been seen using similar pierced tablets for giving uniform size to their bow-strings.[18] There are in the collection some flattened stones of less symmetrical outline, pierced with a number of holes which are rather irregularly distributed, but equal in size to those observed in the tablets just described (Fig. 133, potstone, Penn-

[18] Smithsonian Report for 1870, p. 404.

sylvania). Like many other aboriginal relics, pierced tablets occur in sepulchral mounds as well as on the surface of the ground. Those taken from mounds are said to have mostly been found by the side of the skeleton, or near the bones of the hand.

Allied to the pierced tablets are certain boat-shaped articles, either solid or hollowed on one side, and perforated with two holes, mostly of conical form, and placed near the middle or the extremities of the objects. These relics, though agreeing in general character, differ much in the details of their execution, some being of nearly oval, others of rectangular outline, while the cavity, when it occurs, is sometimes shallow, but in other cases so deep as to give the object almost the appearance of a shell. In a few instances the perforations are altogether wanting. Such specimens, however, may have remained in an unfinished state. The objects in question are nearly always well fashioned and polished, their material consisting sometimes of porphyritic syenite, greenstone, etc., but occasionally of softer substances, such as slates, among which the striped variety seems to prevail. Their purpose, probably, was similar to that for which the pierced tablets were designed (Fig. 134, striped slate, Ohio; Fig. 135, greenstone, Kentucky).

13. Stones used in Grinding and Polishing.—There are in the archæological department of the National Museum many stones marked with hollow

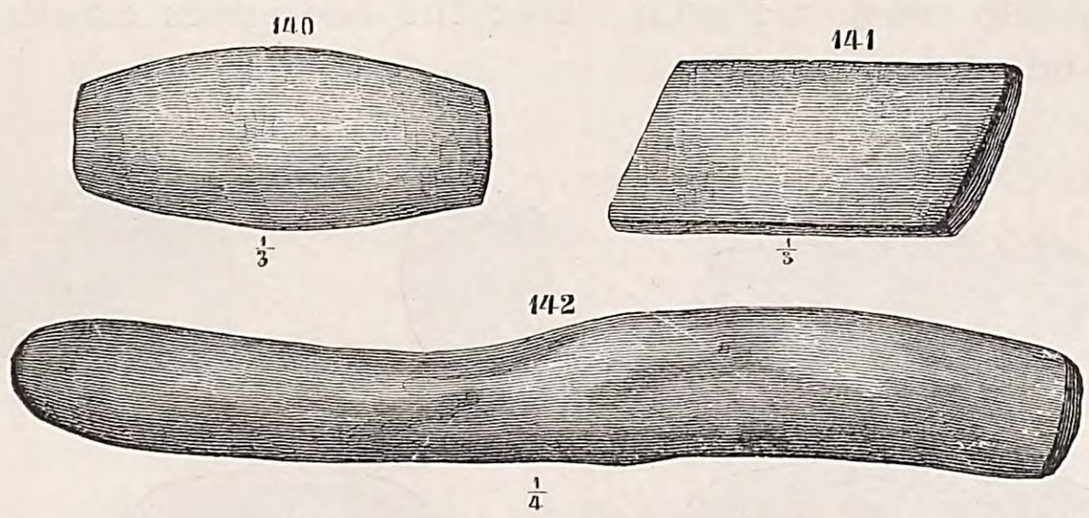


STONES USED IN GRINDING, ETC. ($\frac{1}{2}$).

faces, grooves, or notches, which were apparently produced by the grinding or sharpening of tools, or by the process of smoothing and condensing cords of animal or vegetable material. The more special uses of these relics are

not quite obvious in many cases. Certain flattish stones which are furrowed with grooves radiating toward the circumference, may have been used in the preparation of cords (Fig. 136, quartzose rock, New Jersey). On other stones are seen straight grooves of suitable size for straightening and rounding the shafts of arrows (Fig. 137, chlorite slate, Massachusetts; Fig. 138, compact chlorite, Mexico; Fig. 139, hornblende rock, Southern Utah; probably recent). The most conspicuous specimen of this class is a heavy limestone block, bearing on its surface seven deep straight grooves from eight to ten inches in length. This specimen was found in Onondaga County, New York.

In lieu of the grooved stones some Indian tribes of our time employ for fashioning their arrow-shafts short wooden sticks hollowed longitudinally and coated on the inner side with a cement of coarse quartz sand and glue. This aboriginal contrivance is illustrated in the collection by several specimens obtained from the nearly extinct Mandan tribe.

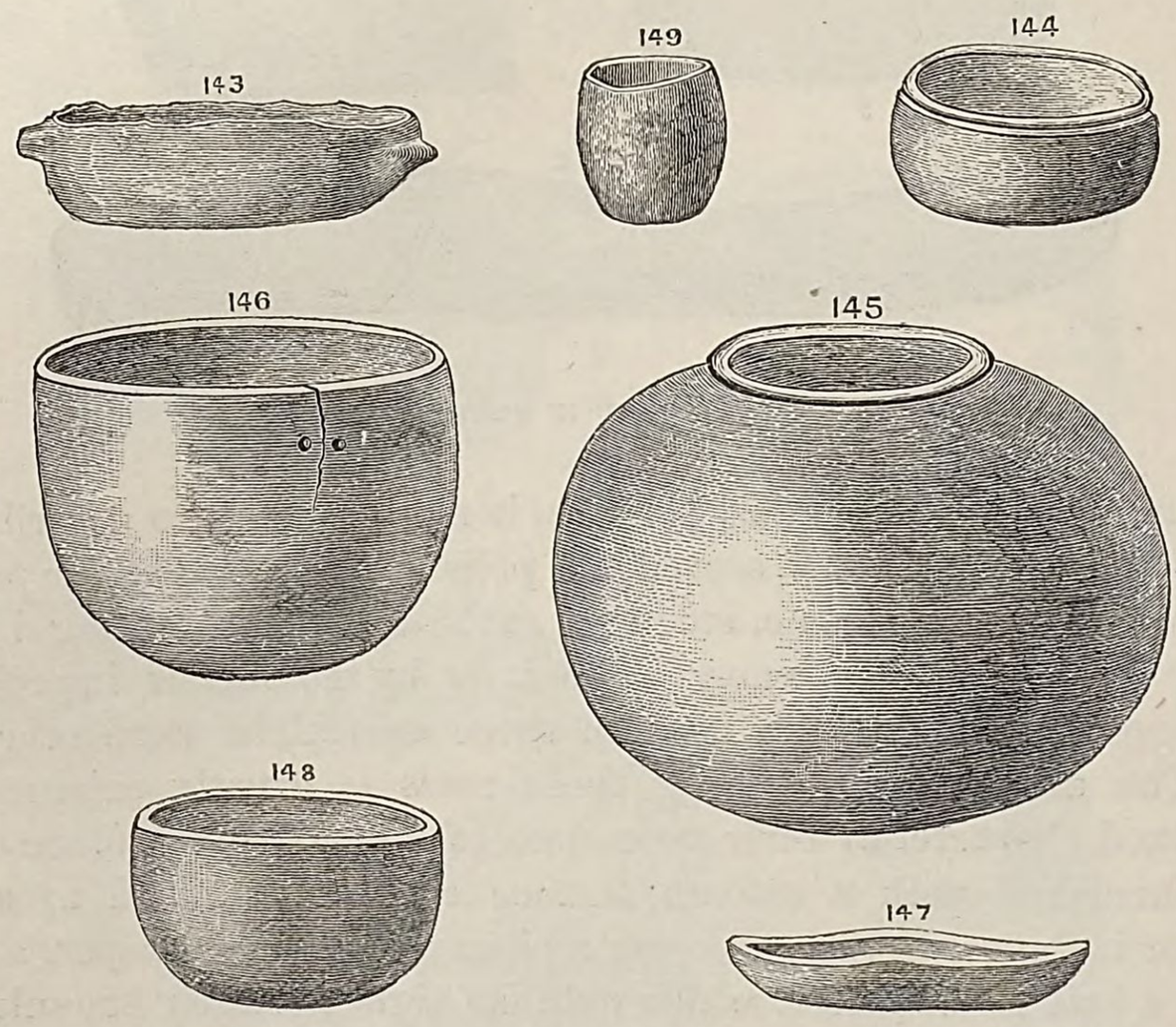


STONES USED IN POLISHING.

No group of aboriginal relics, perhaps, is more difficult to describe than the stones which have apparently served for polishing implements or parts of implements of stone, horn, bone, etc., and, probably, for smoothing leather and other soft substances. In many cases it is by no means improbable that stones supposed to have been used in those operations were otherwise employed. The difficulty of classing these tools is greatly enhanced by the totally unfixed character of their appearance, for nearly every stone of suitable size and furnished with a smooth surface could be utilized as a polisher. There is, for instance, in the collection a piece of yellowish jasper, about three inches and a half in diameter, which exhibits eight perfectly smooth and even facets, each of which presents a different form. It is difficult to assign to this stone any other use than that of a polisher. The collection contains several specimens of similar, though less striking, character. Other polishers are regularly shaped and carefully worked, and nothing indicates their application as polishing tools but the smoothness of those parts with which the operation was performed. One specimen presents the outline of an oval with truncated ends, which, to judge from their glossy appearance, were used in the polishing

process (Fig. 140, quartzose rock, Indiana). There is a cast in the collection, presenting the fac-simile of a flat implement of rhomboidal outline, showing very glossy side-surfaces which seem to have been used in polishing (Fig. 141, Louisiana). Other specimens are shaped like very flat celts of equal thickness, in which, as it appears, the blunt edges formed the working parts. It is possible, however, that specimens of this form were intended for other operations. A curious class of implements supposed to have served as polishers, consists of stick or club-shaped stones—mostly natural formations, but sometimes modified by art—which bear at their ends the marks of friction (Fig. 142, lydite, Pennsylvania).

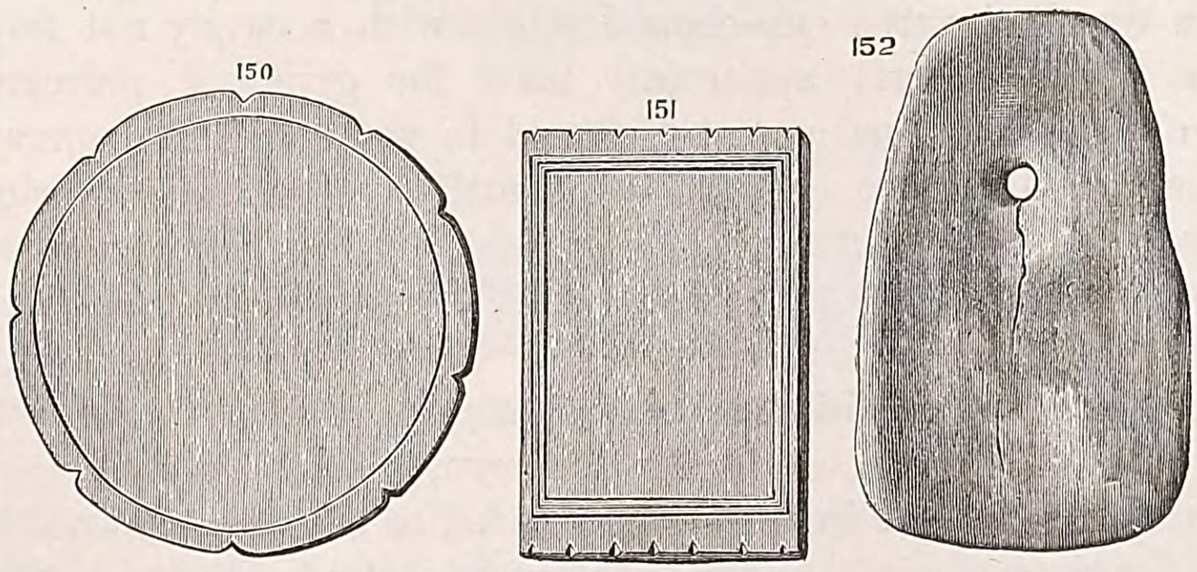
14. Stone Vessels.—Though nearly all classes of aboriginal relics are represented on a large scale in the National Museum, the series of vessels of stone is particularly distinguished by the number as well as by the diversity of the specimens. The most elaborate objects of this kind are derived from the Californian islands (San Miguel, Santa Cruz, Santa Catalina, etc.), and from the opposite coast, a region where the aborigines excelled in various kinds of manufactures.



STONE VESSELS ($\frac{1}{6}$).

It appears that vessels consisting of hard kinds of stone occur rarely in that part of the United States which lies east of the Rocky Mountains. In the Atlantic and Middle States, however, vessels made of the comparatively soft potstone (commonly called soapstone—the *lapis ollaris* of the ancients) have often been met. They differ, of course, in shape and workmanship, some

being rather uncouth specimens of aboriginal art; others, again, are tolerably well formed, and betoken no small degree of perseverance on the part of their makers. Most of those seen by the writer were of an elongated shape, somewhat like a boat or a trough, and provided with projections or handles at the opposite narrower extremities (Fig. 143, Massachusetts). A bowl-shaped vessel from Wyoming Territory (Fig. 144) is made of the same material. By far the best potstone vessels, however, have been found in the Californian districts before mentioned.[19] Among them are nearly globular cooking vessels with rather narrow apertures encircled by raised rims. Some of them measure more than a foot in height and fifteen inches in diameter, and their thickness, about five-eighths of an inch at the rim, gradually increases toward the bottom. These utensils are admirable specimens of Indian skill, being almost as regular in outline as though they had been produced with the assistance of the turner's wheel (Fig. 145, Dos Pueblos, Santa Barbara County). Other Californian potstone vessels of large size present the shape of high bowls. One of them is pierced with two small holes near the rim, evidently for repairing the damage produced by a crack (Fig. 146, Dos Pueblos). Among the smaller vessels made of the same material, and obtained from the same region, may be mentioned one which is formed in the shape of a boat (Fig. 147, Santa Cruz Island). Serpentine was likewise employed by the Californian aborigines as the material for vessels, such as cups, bowls, etc., which are in no way inferior to those made of potstone, and even surpass them by being well polished (Fig. 148, serpentine, San Miguel Island). It seems, however, that only small or medium-sized objects of this class were made of serpentine. A small Californian sandstone vessel with an oval aperture, and deeply hollowed, probably served as a drinking cup (Fig. 149, Santa Cruz Island).



STONE PLATES ($\frac{1}{6}$).

It may not be altogether out of place to mention in connection with stone vessels a class of remarkable stone plates, which possibly may have pertained to the culinary utensils of the aborigines. One of the specimens is a perfectly

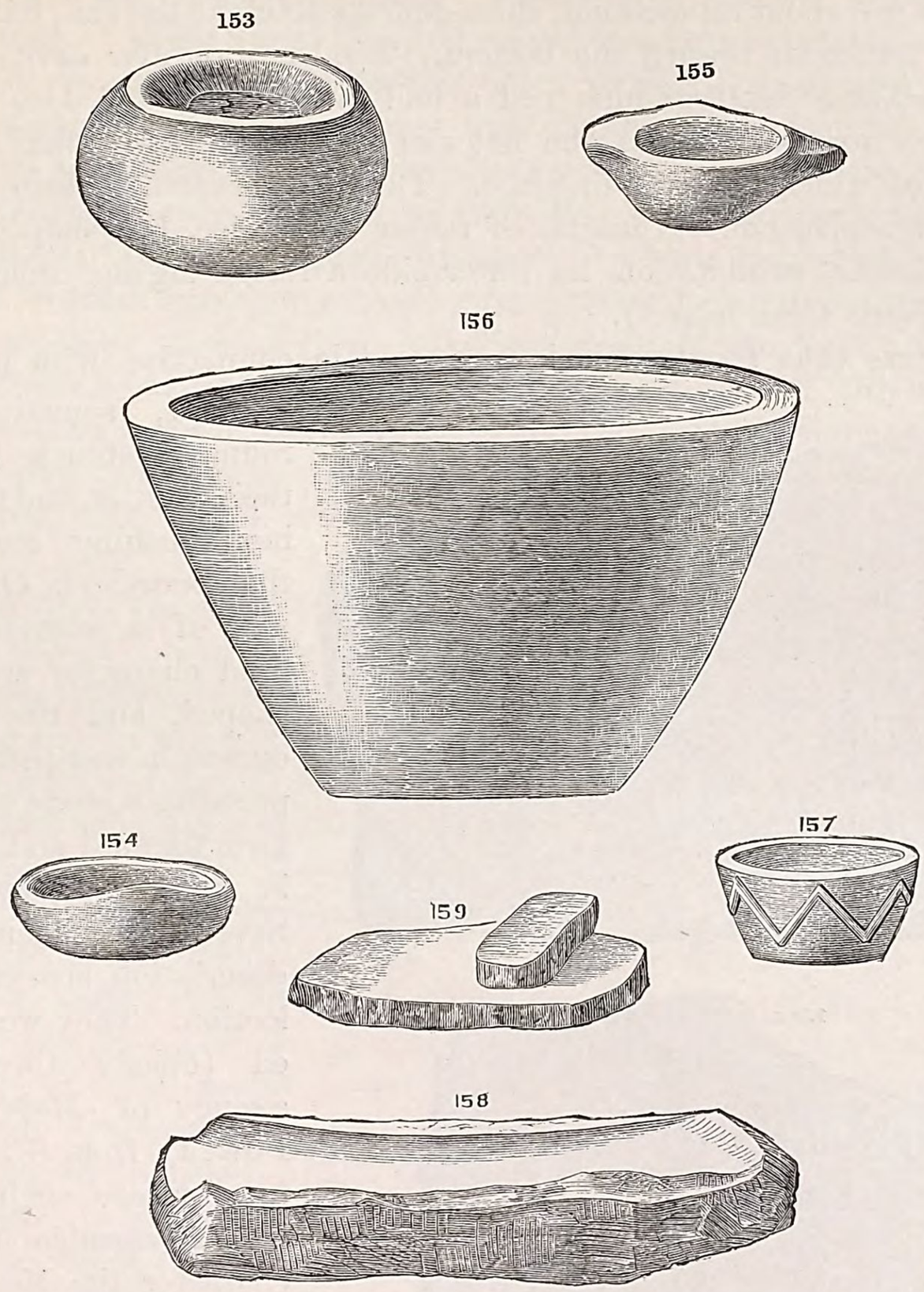
[19] These stone vessels as well as the Californian mortars and pestles described on the following pages were recovered from graves by Mr. Paul Schumacher.

flat and well-smoothed stone plate of circular shape, three-eighths of an inch in thickness, and measuring a little less than ten inches in diameter. An incised line runs parallel with the circumference, which is further ornamented with nine rather irregularly distributed notches (Fig. 150, graywacke, mound in Alabama). Another specimen of the same character (derived from the same locality) measures only eight inches in diameter, and is ornamented with three engraved parallel rings and twenty-one notches around the periphery. A third elaborately finished stone plate is of a rectangular shape, and bears as ornaments incised lines which run parallel with the sides, forming three rectangles, and six notches on each of the smaller sides (Fig. 151, material and locality the same). It would be impossible, of course, to state the exact use of such plates, and it remains undecided whether they served as griddles, or as plates for holding solid food, or for some ceremonial or other purpose. A roughly worked plate of clay-slate, nearly rectangular in outline, and measuring about seven inches by five, was found in an Indian grave in Tennessee near the skull (No. 16799 of the collection). This plate and the more elaborate specimens just described possibly were designed for the same use.

There are further to be mentioned slightly concave perforated plates of different sizes and shapes, with angles rounded by the action of the elements rather than by art. They consist of potstone, and were obtained from California (Fig. 152, Santa Cruz Island). The character of the curvature in these Californian plates seems to indicate that they were made from broken vessels. An explanation of their special use is not attempted for the present.

15. Mortars.—The mortars and mortar-like utensils form a particularly rich and varied series in the National Museum, embracing all forms and sizes, from the diminutive cup-shaped stone with a cavity not large enough to hold a hazelnut, and apparently used for grinding pigments, to the ponderous deeply hollowed vessel designed to withstand the operation of the heavy stone pestle. The cultivation of maize among the aboriginal tribes spread over the eastern area of the present United States necessitated the application of grinding utensils, which are, therefore, not unfrequently found on the sites of their former settlements. They are stone slabs or boulders exhibiting shallow concavities, or real mortars hollowed to a depth sufficient to hold a quantity of the cereal. It is shown, however, by the occurrence of circular cavities in projecting ledges of rocks, or in large immovable boulders, that the aborigines sometimes dispensed with portable mortars. Such stationary contrivances for triturating grain have been noticed in many localities where the Indians formerly dwelt. They used also large wooden mortars hollowed with the assistance of fire, as described by Adair in his "History of the American Indians" (p. 416). Some wooden mortars, made by the Iroquois, may be seen in the ethnological department of the National Museum. They are cylindrical, twenty-six inches high, and a little more than fifteen in diameter. The rounded cavity has a depth of about one foot. The wooden pestles

used in connection with them measure more than four feet in length.[20] A wooden Mohave mortar of the collection is not quite so large, and not cylindrical, but somewhat tapering toward the bottom. In this specimen the hollowing by fire is distinctly perceivable.



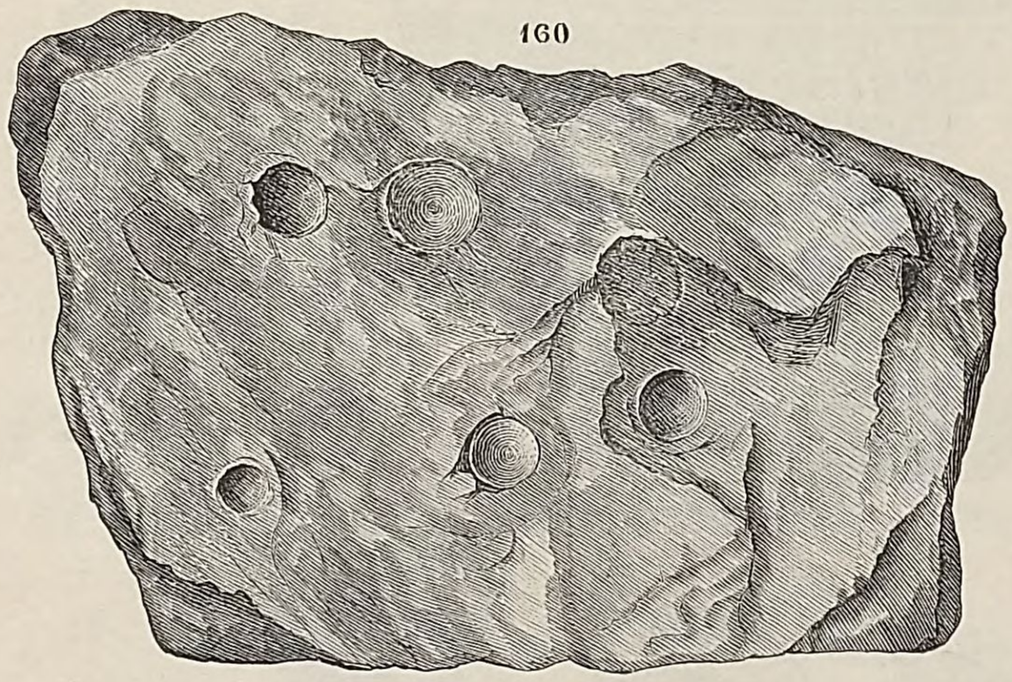
MORTARS AND KINDRED UTENSILS ($\frac{1}{6}$).

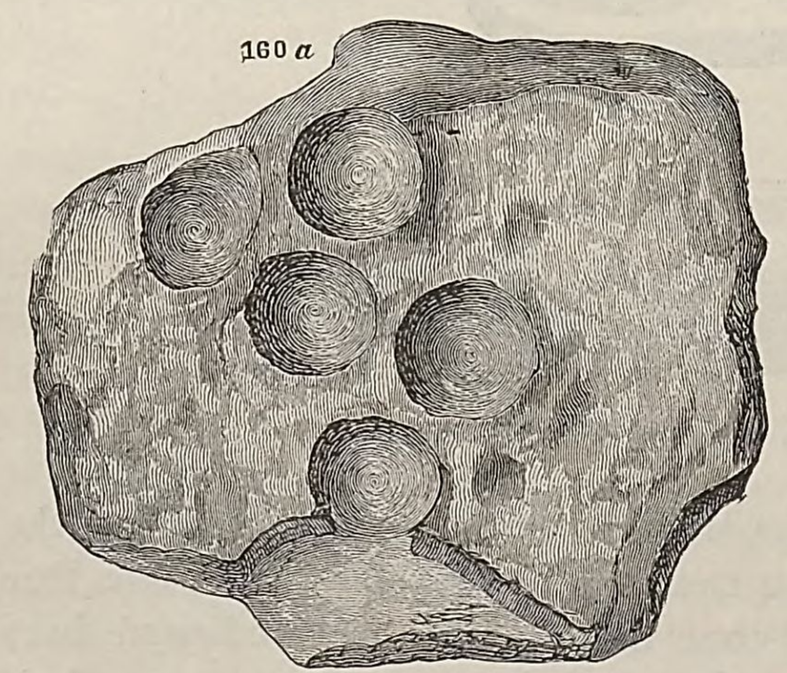
By far the best stone mortars in the Museum have been obtained from the Californian islands and the neighboring coast, more especially from Dos Pueblos. They are made of a compact sandstone which, though of sufficient hardness could be worked with tolerable ease. Some of these mortars are mere boulders hollowed to the proper depth (Fig. 153, San Nicolas Island; Fig. 154, same locality); others have been modified to a certain extent (Fig. 155, same

[20] A drawing of an Iroquois mortar with pestle is given in Morgan's "League of the Iroquois," Rochester, 1851, p. 371.

locality). Not a few of them, however, are of a remarkably symmetrical shape, and their production, notwithstanding the tractable character of the material, must have been the result of long-continued patient labor. Many measure more than a foot in height, and nearly twenty inches in diameter at the widest part. They are about an inch and three-fourths thick at the rim, but increase slightly in thickness toward the bottom. The very regular cavity in these mortars reaches a depth of nine and a half inches (Fig. 156, Dos Pueblos). In a number of the mortars the flat rim was inlaid with small pieces of shell, some of which are still in place. They were cemented into the stone by means of asphaltum. A mortar of rather small size, but shaped like the larger specimens, exhibits on its outer side a raised zigzag ornamentation (Fig. 157, Santa Cruz Island).

The mortars thus far described were used in connection with pestles, or, perhaps, sometimes with rounded stones fitting in their cavities, and thus forming crushing tools rather than pounders. Other utensils of a somewhat kindred character are trough-shaped, and the grinding operation was performed by pressing a stone of suitable form forward and backward in the elongated cavity. Several specimens of this description are in the collection. They were obtained (chiefly through the agency of Major J. W. Powell) from Utah Territory, where such utensils, which resemble in general character the Mexican *metate*, are still used by the aborigines (Fig. 158, sandstone). Instead of the concave stone a perfectly even stone slab is employed, in connection with a rubbing-stone with flat faces, by New Mexican tribes (Fig. 159, granite slab, sandstone rubber, Navajo Indians).





STONES BEARING CUP-SHAPED DEPRESSIONS ($\frac{1}{3}$)

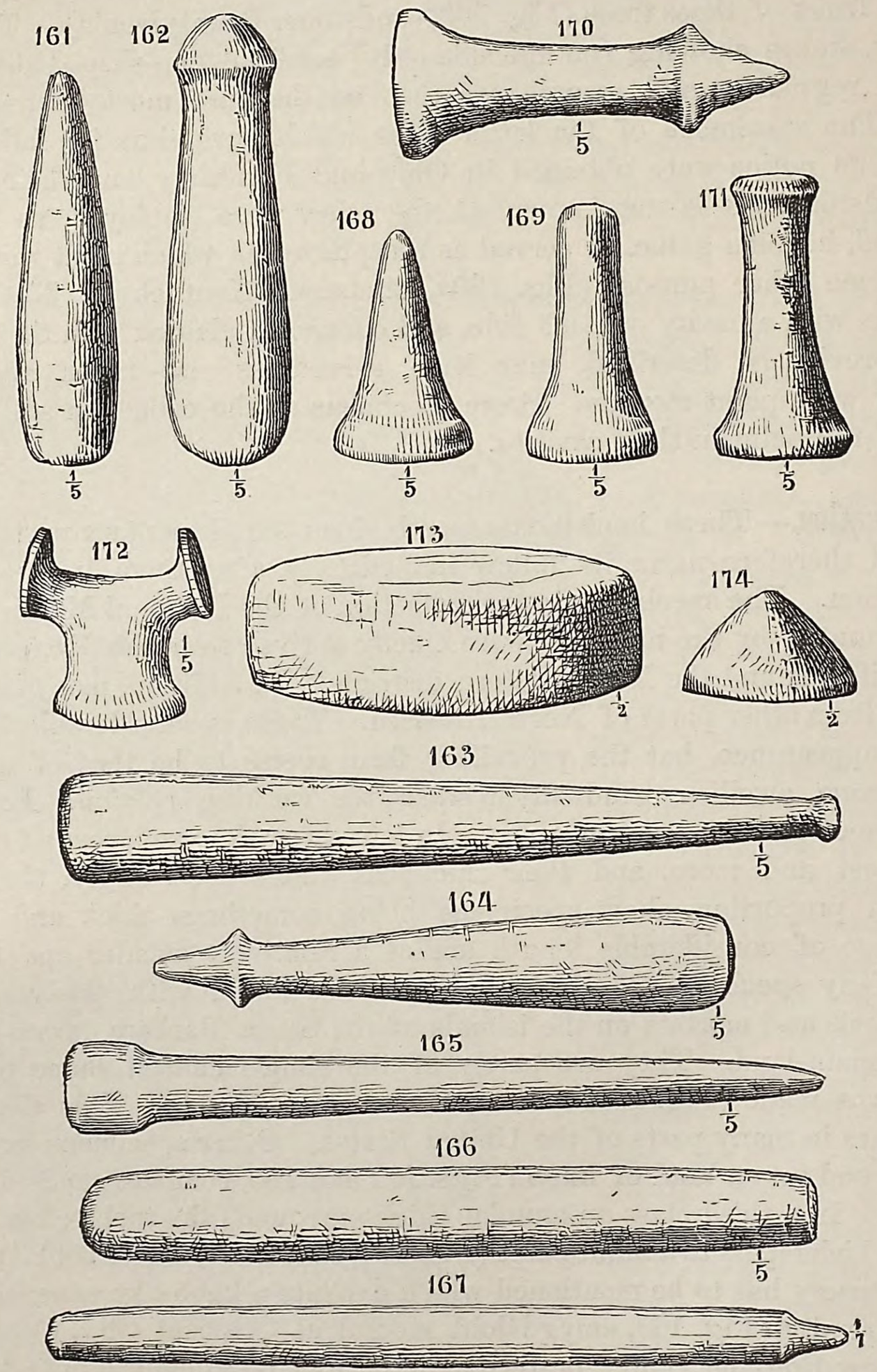
Somewhat partaking of the character of mortars are good-sized stones, mostly solid slabs, exhibiting on one of the faces, or on both, rather irregular cup-shaped depressions, usually placed near each other. It is supposed that

the natives used these stones for cracking nuts which they laid in the cavities, applying a stone for breaking them. There are several of these "nut-stones" in the collection. Specimens made of potstone have been found in districts of Georgia where walnut-trees abound.[21] The Indians, it is well known, made oil from the fruits of these trees (Fig. 160, sandstone, Pennsylvania). There are, however, stones showing (on one side only) artificial cup-shaped depressions of such regularity and smoothness that another use must be ascribed to them. The specimens of the latter class which have thus far fallen under the writer's notice were obtained in Ohio and Kentucky, and their material was sandstone. It is not known whether they were employed, as has been suggested, in some game, or served as receptacles in which paint was rubbed, or for some other purpose (Fig. 160*a*, sandstone, Kentucky). Not a few of the stones with a cavity on each side, and commonly classed with the hammer-stones previously described, may have served as nut-stones, and others evidently were paint-mortars. Some specimens of the collection still bear the traces of red paint in their cavities.

16. Pestles.—These implements mostly form supplementary parts of mortars, and therefore naturally follow immediately after them in the present enumeration. The specimens in the collection of the National Museum, which can be counted by the hundred, were chiefly derived from the Eastern States, from California and the Northwestern districts. In addition, many have been obtained from other parts of North America. There is considerable difference in their appearance, but the prevailing form seems to be that of a bluntly pointed cone, swelling gradually toward the working portion. Four-sided pestles are of rather rare occurrence. In length pestles vary from a few inches to two feet and more, and their thickness differs accordingly, though not always in proportion, short specimens being sometimes thick and clumsy, while those of considerable length are of a relatively slender and tapering form. Many specimens of the collection were found with the remarkable stone vessels and mortars on the islands of the Santa Barbara group and the opposite main-land. They are partly of the simple conical shape to which allusion was made (Fig. 161, syenite, Santa Cruz Island). This elementary form occurs in many parts of the United States. Other specimens expand at the upper end into a kind of knob (Figs. 162 and 163, compact sandstone, Dos Pueblos). In a third class an annular ridge surrounds the tool below the upper end, which tapers to a blunt point (Fig. 164, sandstone, Dos Pueblos). And lastly, a variety has to be mentioned which exhibits a knob-like expanse at the lower extremity (Fig. 165, amygdaloid, mound at Crescent City, California). In the New England States pestles, more or less resembling a cylinder with rounded ends, are quite frequent, and sometimes of considerable length (Fig. 166, fine-grained sandstone, Rhode Island). Though the extremities of these

[21] C. C. Jones, "Antiquities of the Southern Indians," New York, 1873, p. 315.

cylindrical implements bear often the unmistakable marks of wear, it appears probable that they were sometimes used like rolling-pins for crushing the grain. A very fine specimen from Alaska, measuring as much as two feet



PESTLES AND MULLERS.

five and a half inches in length, and consisting of compact greenstone (Fig. 167) exhibits a somewhat similar character, but is differently shaped at the tapering upper end. It may be of comparatively recent manufacture.

There are short pestles in which the round base is much enlarged, insomuch that the object may be compared to a cone with an inwardly curved side-surface. In many, however, the working part is not convex, but perfectly even, which proves that they were not used in connection with mortars, but were made to operate on a flat surface. Some show, moreover, a small concavity in the centre of the working part, undoubtedly produced by cracking nuts or other hard substances (Fig. 168, greenstone, Pennsylvania; Fig. 169, syenite, Ohio). A very fine specimen from British Columbia, pertaining to the class here described, is encircled by a ring-like projection below the upper end (Fig. 170, greenstone). Another specimen of somewhat recent aspect, and derived from Washington Territory (Fig. 171), is described on the accompanying label as an "Indian hammer used to drive wooden or horn wedges to split wood." This implement consists of a beautiful silicious stone of a light-green color, and is worked with great care.

The most curious and elaborate specimens of the pestle kind were brought from Alaska. These tools are provided with horizontal handles terminating in round plates, slightly convex on the outside. The base or working part in these implements is perfectly even and smooth (Fig. 172, greenstone; apparently an old tool).[22]

Two pestles from Alaska are ornamented at the upper end with rude carvings, representing, respectively, the heads of a bird and of a quadruped, both unrecognizable. A fragmentary pestle from Massachusetts bears at its upper extremity the well-executed figure of a raccoon, and another specimen from the same State is fashioned in imitation of the male organ of generation.[23]

It seems proper to mention in this place more or less carefully worked disc-shaped stones of a size to be conveniently grasped with the hand, which, to judge from the smoothness of their flat faces, were applied in triturating grain or other substances (Fig. 173, greenstone, Georgia). In conclusion, reference should be made to a class of small conoid-shaped mullers, sometimes made of hematite, which may have been used for rubbing paint (Fig. 174, greenstone, Ohio). Specimens of this description are not very abundant.

17. Tubes.—Among the aboriginal relics of somewhat enigmatical character are stone tubes of cylindrical and other shapes and various lengths, which sometimes terminate at one end in a sort of mouth-piece. While the smaller ones, which often measure only a few inches, have been thought to represent articles of ornament, or amulets, different purposes have been ascribed to the larger specimens. Schoolcraft seems to consider these latter

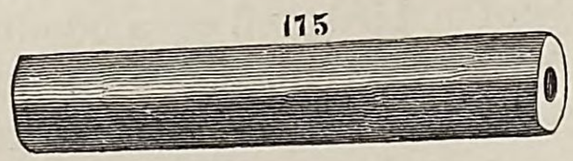
---

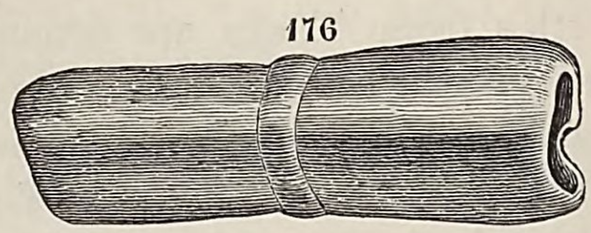
[22] The writer was informed by Mr. W. H. Dall, that such pestles were formerly used by the natives of Alaska for mixing berries, fish-oil, fat, etc., in the preparation of an article of food. Such implements are no longer made. A few specimens are still in the possession of the aborigines, who preserve them as heir-looms.

[23] Several carved stone objects of this class, not forming parts of pestles, are in the collection. They seem to indicate a love for the obscene rather than anything like phallic worship.

as telescopic instruments which the ancient inhabitants used for observing the stars. This view, it appears, has been generally rejected. There is more probability that the tubes, in part at least, were implements of the medicine-men who employed them in their pretended cures of diseases. They applied one end of the tube to the suffering part of the patient, and sucked at the other end, in order to draw out, as it were, the morbid matter, which they afterward feigned to eject with many gesticulations and contortions of the body. Coreal, who traveled in America from 1666 to 1697, calls the tubes employed by the medicine-men of the Florida Indians "a kind of shepherd's flute" (*une espèce de chalumeau*).[24] They are referred to by Venegas[25] and Baegert[26] as being in use among the Californians, and the German traveler Kohl saw, as late as 1855, one of the above-mentioned cures performed among the Ojibways of Lake Superior. In this instance, however, the tube used by the medicine-man was a smooth hollow bone, probably of the brant-goose.[27]

The specimens in the Smithsonian collection chiefly consist of light-gray steatite, of striped slate, or of chlorite. As a typical object (Fig. 175, Tennessee) the writer would mention a beautifully polished cylindrical tube,





TUBES ($\frac{1}{3}$).

measuring nearly six inches in length. The carefully drilled perforation has at one end a diameter of about one-fourth of an inch, but it gradually expands until it reaches at the opposite end a diameter of three-fourths of an inch. The striæ produced by the drilling process are distinctly visible. Another specimen of a different (but not uncommon) type is encircled in the middle by a raised ring, and expands toward the ends (Fig. 176, chlorite, Tennessee). The large cavity is not drilled, but rather irregularly scooped out with a tool from both sides, narrowing considerably toward the middle, where it has a diameter of half an inch.[28] The Gosh-Utes of Western Utah use at the present day small pipes of somewhat similar shape, and hence it is not altogether improbable, that the tubes of the type just mentioned were smoking utensils. In fact, that character has been ascribed to various kinds of objects of tubular shape.

---

[24] Coreal: Voyages aux Indes Occidentales, Amsterdam, 1722, Vol. I, p. 39.

[25] Venegas: History of California, London, 1759, Vol. I, p. 97.

[26] Baegert: Account of the Aboriginal Inhabitants of the Californian Peninsula, in Smithsonian Report for 1864, p. 386.

[27] Kohl: Kitschi-Gami, oder Erzählungen vom Obern See, Bremen, 1856, Vol. I, p. 148.

[28] A very fine specimen of this class, nearly fourteen inches long, lately has been deposited in the National Museum. It was obtained near Knoxville, Tennessee.

A very remarkable tube of striped slate, thirteen inches long, and terminating at one end in a broad mouth-piece, was obtained by Messrs. Squier and Davis in a mound near Chillicothe, during their survey of the aboriginal earthworks in the State of Ohio. This specimen, represented by a cast in the collection (No. 7243), is figured and described on page 224 of the "Ancient Monuments of the Mississippi Valley" by Squier and Davis, forming the first volume of Smithsonian Contributions to Knowledge.

18. Pipes.—No class of aboriginal productions of art exhibits a greater diversity of form than the pipes carved from stone or moulded in clay. Indeed, a volume would be required for figuring and describing the various shapes of these utensils, the manufacture of which offered to the aboriginal artist an unlimited scope for displaying his individual skill and ingenuity. Some of the more marked types only can be noticed in this account. Stone was the material chiefly used in the manufacture of these smoking utensils, though pipes of clay are by no means uncommon.[29] In the following enumeration of typical pipes of earlier date those of clay have been included—somewhat in violation of the plan of arrangement—in order to avoid the necessity of treating them separately in the section relating to the ceramic manufactures of the aborigines.

Numerous stone pipes of a peculiar type were obtained, many years ago, by Messrs. Squier and Davis during their survey of the ancient earthworks in the State of Ohio. They have been minutely described and figured by them in the first volume of Smithsonian Contributions to Knowledge. The originals of these remarkable smoking utensils (presently to be described) are now in the Blackmore Museum at Salisbury, England; but the National Museum possesses casts of them, which enable visitors to become acquainted with their character. These pipes were formerly thought to be chiefly made of a kind of porphyry, a substance, which, by its hardness, would have rendered their production extremely difficult. That view, however, was erroneous; for since their transfer to the Blackmore Museum they have been carefully examined and partly analyzed by Professor A. H. Church, who found them to consist of softer materials, such as compact slate, argillaceous ironstone, ferruginous chlorite, and calcareous minerals.[30] Nevertheless, they constitute the most remarkable class of aboriginal products of art thus far discovered; for some of them are so skillfully executed that a modern artist, notwithstanding his far superior metallic tools, would find no little difficulty in reproducing them.

---

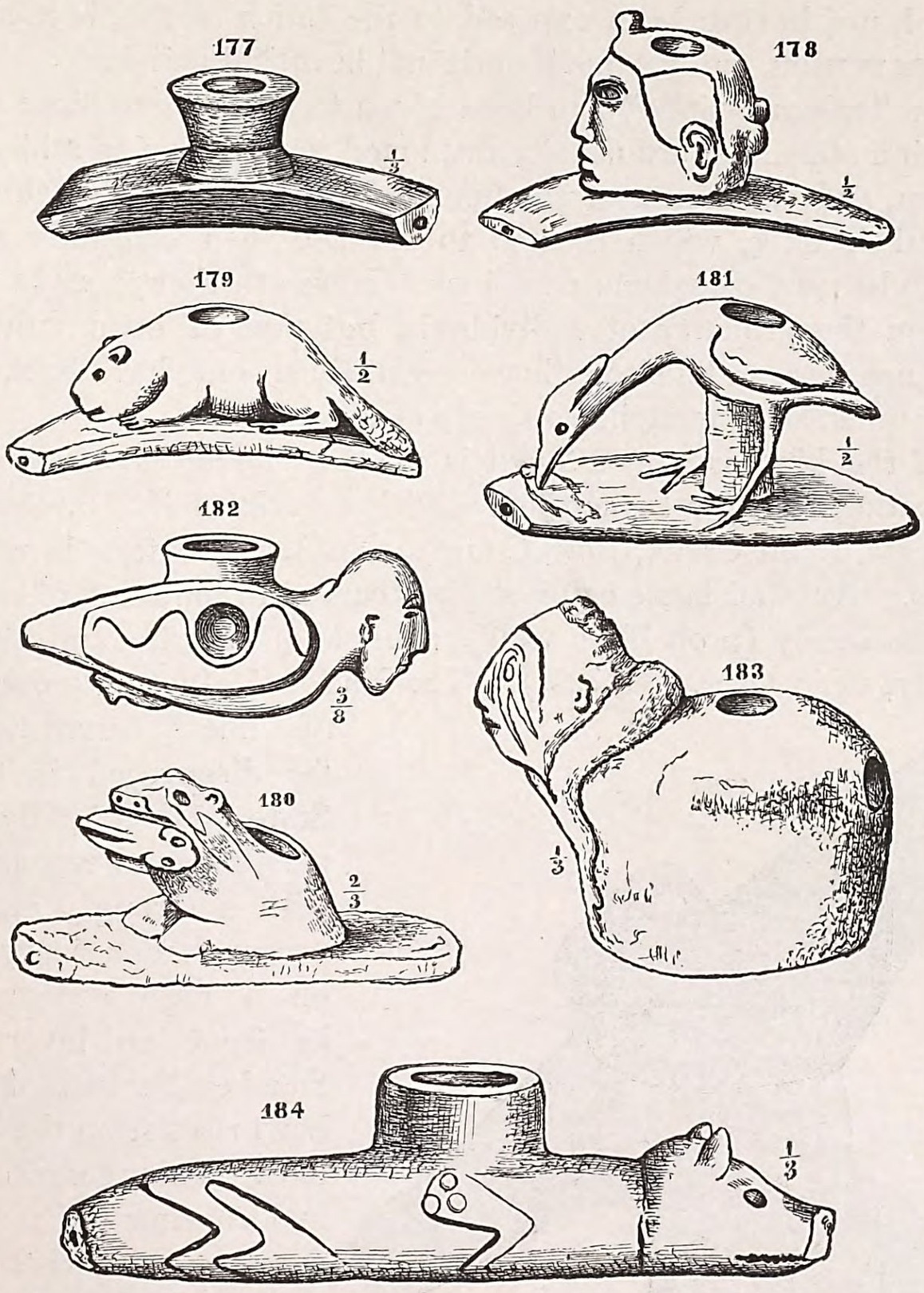
[29] The navigators who first visited the Atlantic Coast of North America noticed copper pipes among the natives, as, for instance, Robert Juet, who served under Hudson as mate in the Half-Moon. Such pipes must be very rare. There are none in the Smithsonian collection.

[30] The subject is fully treated in "Flint Chips," by E. T. Stevens, London, 1870. From this valuable work the drawings of some of the pipes recovered by Messrs. Squier and Davis are here copied, the original woodcuts used in illustrating the "Ancient Monuments of the Mississippi Valley" having been destroyed by the fire which visited the Smithsonian building in 1865. Figs. 117 to 184 are reproductions of illustrations contained in Mr. Stevens' work.

Four miles north of Chillicothe, Ohio, there lies, close to the Scioto River, an embankment of earth, somewhat in the shape of a square with strongly rounded angles, and enclosing an area of thirteen acres, over which twenty-three mounds are scattered without much regularity. This work has been called "Mound City," from the great number of mounds within its precinct. In digging into the mounds, Squier and Davis discovered hearths in many of them, which furnished a great number of relics, and from one of the hearths nearly two hundred stone pipes of singular form were taken, many of which, unfortunately, were cracked by the action of fire, or otherwise damaged. The occurrence of such pipes, however, was not confined to the mound in question, others having been found elsewhere in Ohio, and likewise in mounds of Indiana. In their simple or primitive form they present a round bowl rising from the middle of a flat and somewhat curved base, one side of which communicates by means of a narrow perforation, usually one-sixteenth of an inch in diameter, with the hollow of the bowl, and represents the tube or rather the mouth-piece of the pipe, while the other unperforated end forms the handle by which the smoker held the implement and approached it to his mouth. A remarkably fine specimen of this kind (Fig. 177) was found in a mound of an ancient work in Liberty Township, Ross County, Ohio. In the more elaborate specimens from "Mound City" the bowl is formed in a few instances in imitation of the human head, but generally of the body of some animal, and in the latter cases the peculiarities of the species which have served as models are frequently expressed with surprising fidelity. The human heads, undoubtedly the most valuable specimens of the series, evidently bear features characteristic of the Indian race, and they are further remarkable for the head-dress or method of arranging the hair (Fig. 178). A few of the heads show on the face incised ornamental lines, obviously intended to imitate the painting or tattooing of the countenance. The following mammals have been recognized: the beaver (Fig. 179), the otter (with a fish in its mouth, Fig. 180), the elk, bear, wolf, panther, wild-cat, raccoon, opossum, squirrel, and sea-cow (manati, lamantin, *Trichecus manatus*, Lin.). Of the animal which is supposed to represent the sea-cow, seven carvings have been found. This inhabitant of tropical waters is not met in the higher latitudes of North America, but only on the coast of Florida, which is many hundred miles distant from Ohio. The Florida Indians called this animal the "big beaver," and hunted it on account of its flesh and bones.[31] More frequent are carvings of birds, among which the eagle, hawk, falcon, turkey-buzzard, heron (Fig. 181), several species of owls, the raven, swallow, parrot, duck, and other land and water-birds have been recognized. One of the specimens is supposed to represent the toucan, a tropical bird not inhabiting the United States; but the figure is not of sufficient distinctness to identify the original that was before the artist's mind, and it would not be safe, therefore, to make this specimen

[31] Bartram: Travels, Dublin, 1793, p. 229.

the subject of far-reaching speculations. The amphibious animals, likewise, have their representatives in the snake, toad, frog, turtle, and alligator. One specimen shows a snake coiled around the bowl of the pipe. The toads, in particular, are faithful imitations of nature. Leaving aside the more than doubtful toucan, the imitated animals belong, without exception, to the North American fauna, and there is, moreover, the greatest probability that the



STONE PIPES.

sculptures in question were made in or near the present State of Ohio, where, in corroboration of this view, a few unfinished pipes of the described character have occurred among the complete articles.

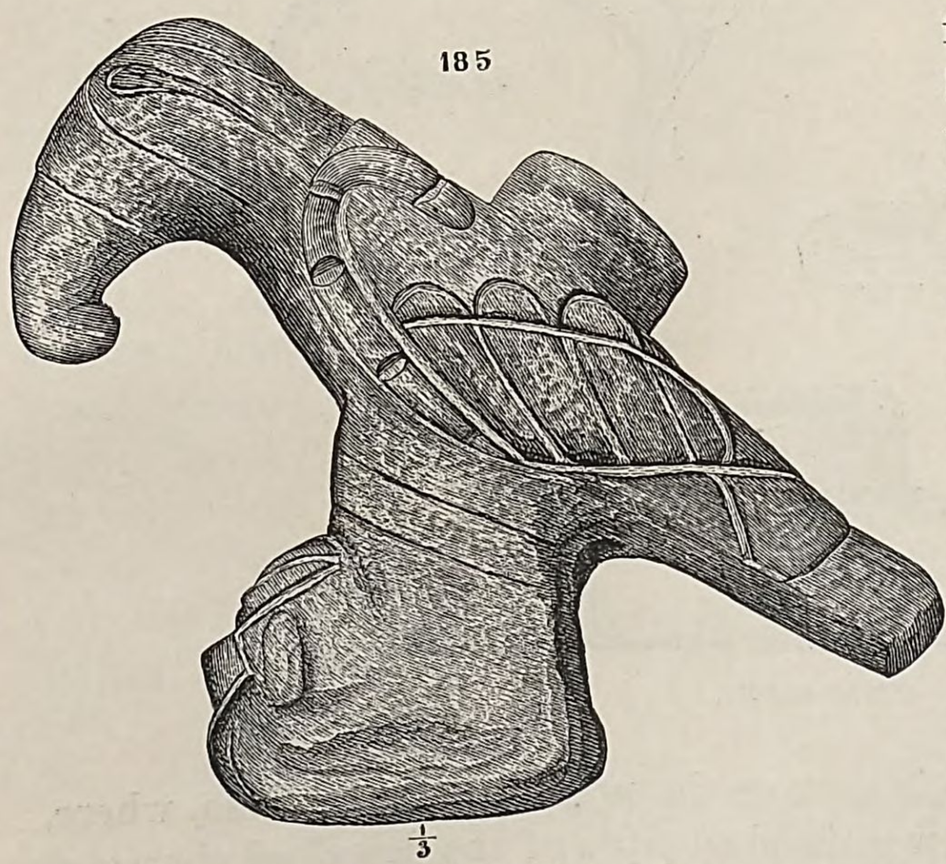
Pipes of this type are generally of rather small size, and in many the cavity of the bowl designed for holding the narcotic is remarkable for its insignificant capacity. These pipes were probably smoked without a stem, the narrowness of the perforations in their necks not permitting the insertion of

anything thicker than a straw or a very thin reed. Yet most of the pipes of earlier date, occurring either in mounds or on the surface of the ground, are provided with a hole of suitable size for the reception of a stem. A very remarkable stone pipe of this character, obtained during the survey of the Ohio earthworks by Squier and Davis, was found within an ancient enclosure, twelve miles below the city of Chillicothe. It represents the body of a bird with a human head exhibiting strongly marked Indian features (Fig. 182). The original, not having been exposed to the action of fire, is in an excellent state of preservation, and retains its original beautiful polish.

The name "calumet-pipes" has been given to large stone pipes which were smoked with a stem, and are usually fashioned in imitation of a bird, mammal, or amphibian, and sometimes of the human figure. They were thus called on account of their bulk, which seemed to indicate their character as pipes of ceremony, to be used on solemn occasions. It was further thought these pipes had not been the property of individuals, but that of communities, a view which does not seem to be altogether correct, since some have been discovered in burial-mounds, accompanying a single skeleton.

A pipe of the kind just mentioned is made of ferruginous sandstone, and represents rather rudely a human figure with a snake folded around its neck (Fig. 183, cast, Paint Creek, Ross County, Ohio). The face is marked with incised lines. Another large calumet-pipe, carved in imitation of a quadruped of the canine family (probably a wolf), consists of chlorite, and was found in Ross County, Ohio (Fig. 184, cast). The National Museum possesses one of the finest calumet-pipes thus far discovered in the United States. It is boldly cut out of potstone, and represents a bird with a strongly curved beak, perhaps an eagle, which stands on a high pedestal, showing in front an inverted human face bearing incised lines. The bowl rises from the back of the bird. This remarkable aboriginal carving (Fig. 185), which partakes somewhat of a "Promethean" character, and may have reference to an event or to some religious conception, was found in the State of Kentucky.

185

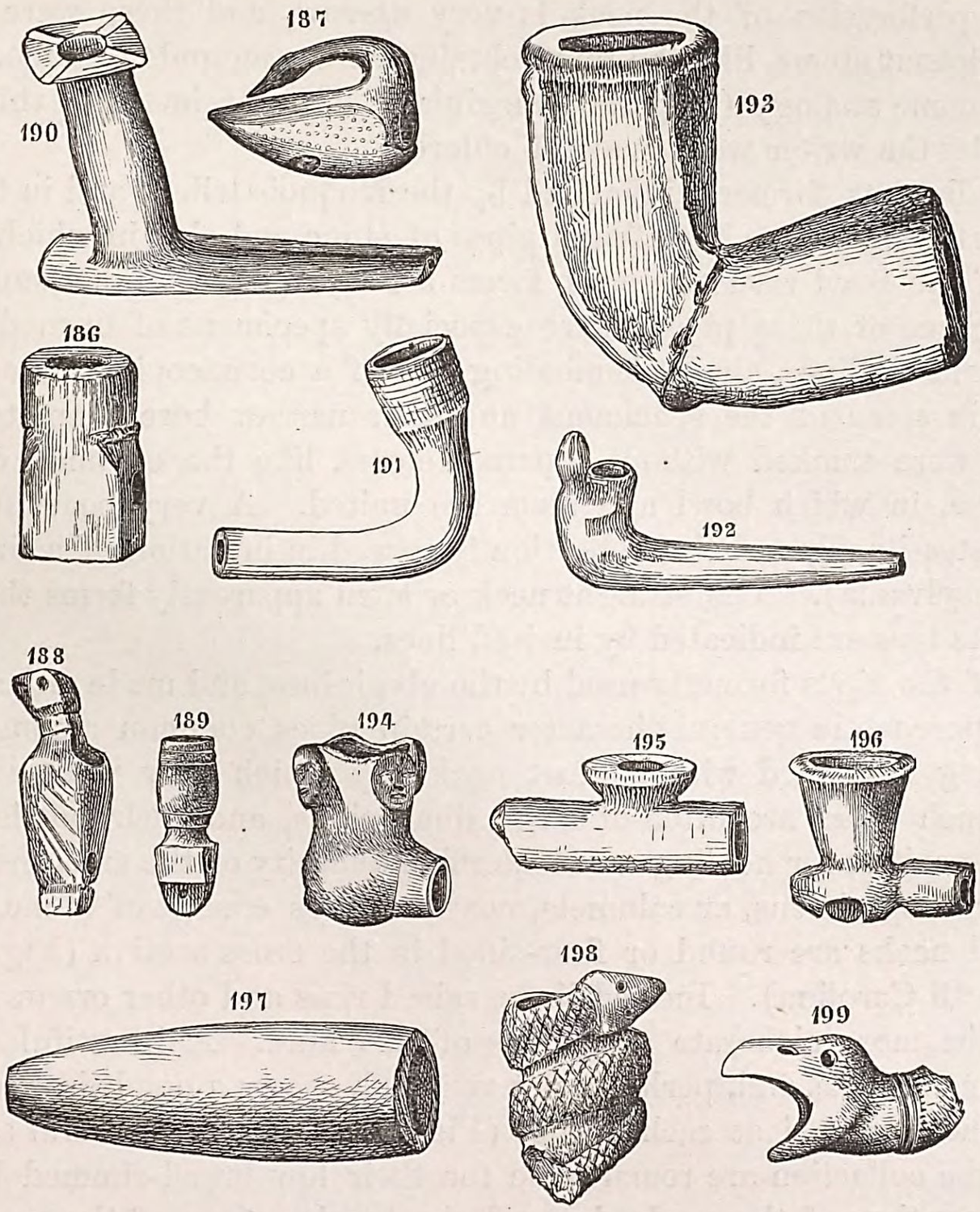


$\frac{1}{3}$

STONE PIPE.

There are many small pipes which, though they were smoked with stems, are not provided with projections or necks for their insertion, thus resembling one of the calumet-pipes just noticed (Fig. 183). The holes designed to hold

them are drilled immediately into the body of the bowl. Pipes of this description assume innumerable forms. Some are produced without much art, almost reminding one of the corn-cob pipes in use among the farmers of this country (Fig. 186, compact argillaceous stone, Pennsylvania); others are fashioned with great care, and may be counted among the better class of Indian products of art. As an example the writer would mention a highly polished serpentine pipe from West Virginia, which might at first sight easily



STONE AND CLAY PIPES ($\frac{1}{3}$).

be mistaken for the imitation of a swan, though it has been ascertained by competent ornithologists that the bird was intended for the loon (Fig. 187). Generally speaking, birds were rather frequently the models copied by the manufacturers of the pipes under notice, and an upright bird figure, with the receptacle of the narcotic hollowed out downward between the wings and an aperture for the stem at some distance from the end of the tail, may be considered as a typical form. A specimen of this description (Fig. 188), made

of a compact argillaceous stone and representing a parrot, was derived from the State of New York. In another class of pipes, somewhat analogous to the preceding type, the barrel-shaped bowl rises from a sort of handle pierced with a hole for the stem (Fig. 189, argillaceous stone, Ohio). Pipes of this character may not be very old.[32]

Passing over to the pipes provided with necks, a typical class deserves mention, in which the almost cylindrical very high bowl stands upon a flat perforated base prolonged beyond the bowl, to form a sort of handle. In some the perforation of the neck is very narrow, and these were probably smoked without stems, like the pipes obtained from mounds in Ohio, to which they bear some analogy (Fig. 190, Virginia). The specimens of this description seen by the writer were made of chlorite.

In the districts formerly inhabited by the Iroquois tribes, and in the neighboring parts, there have been found pipes of stone and clay in which the connection of the bowl with the neck forms a curve (Fig. 191, serpentine, New York). Some of these pipes, more especially specimens of burned clay, exhibit elegant outlines, almost reminding one of a cornucopia. The length of the neck in some of the specimens and their narrow bore seem to indicate that they were smoked without separate stems, like the common clay pipes now in use, in which bowl and stem are united. A very beautiful, highly polished steatite pipe of the collection is carved in imitation of a lizard (Fig. 192, Pennsylvania). The straight neck or stem apparently forms the animal's tail, and its toes are indicated by incised lines.

Many of the pipes formerly used by the aborigines, and made either of stone or clay, approach in general character certain pipes common among civilized races, being furnished with distinct necks by which they were attached to stems. Such pipes are often of large dimensions, and their bowls provided with wide cavities for holding a considerable quantity of the smoking material. These large specimens, or calumets, nearly always consist of stone, and their bowls and necks are round or four-sided in the cross section (Fig. 193, potstone, North Carolina). Incised lines, raised rims and other ornaments, characterize the more elaborate specimens of this kind. A beautiful serpentine pipe of smaller size, and, perhaps, not very old, shows a quadrilateral rim with a human head carved at each corner (Fig. 194, Texas). Several small stone pipes of the collection are remarkable for their low broad-rimmed bowls and the prolongation of the necks beyond the bowls. One of the specimens of this character, which consists of compact limestone, is evidently very old, being entirely covered with a white crust produced by decay (Fig. 195, mound in Kentucky).[33]

Clay pipes of kindred character, moulded into almost every conceivable shape, frequently occur in aboriginal graves as well as on the surface. The

---

[32] The type occurs among the pipes carved by modern Indians.

[33] The pipes made of red pipestone or Catlinite, which are represented by numerous specimens in the collection, belong to more recent times.

bowl often represents a more or less carefully executed human head. Some bear some resemblance to the *chibouc* of the Turks (Fig. 196, Georgia).

Stone pipes of an altogether different character were in vogue among certain Californian tribes. They are of an elongated conoidal shape, of large size and corresponding capacity (Fig. 197, serpentine, Santa Barbara County). Some have been found with a short hollow bone cemented as a mouth-piece into the aperture at the tapering end.[34] Similar pipes of smaller size are still used by the Pai-Utes.

Lastly, special mention should be made of two fragmentary pipes of clay, both found in Madison County, New York, and remarkable for excellent workmanship. In one the bowl is formed by the coils of a skillfully executed snake (Fig. 198); in the other by the head of a bird (apparently a raven) with widely opened bill (Fig. 199). The outside of these specimens is coated with a yellowish brown paint, and perfectly smooth.

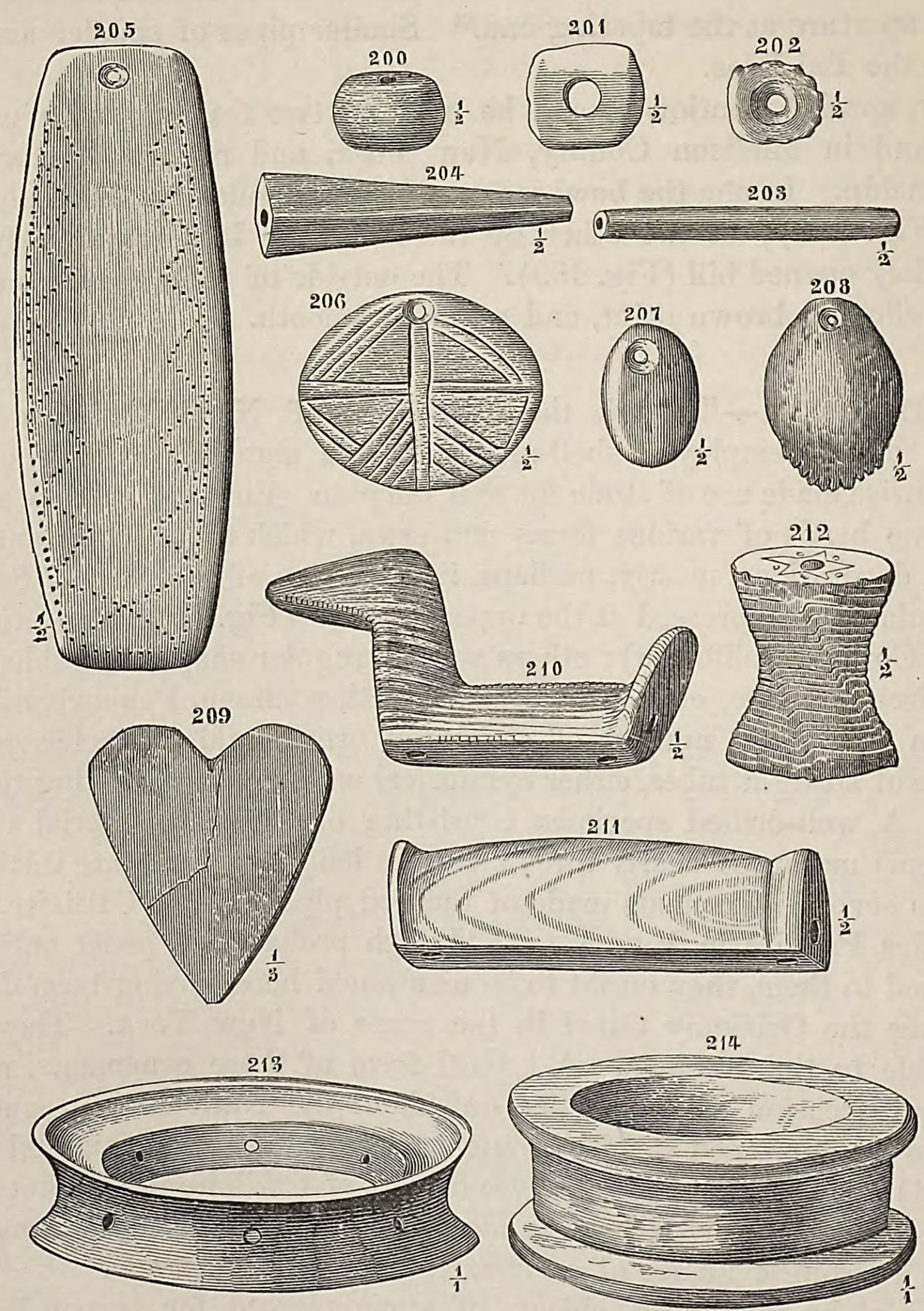
19. Ornaments.—Though the aborigines of North America (north of Mexico) chiefly employed shell-matter as the material of their ornaments, they likewise made use of stone for that purpose. First ought to be mentioned their stone beads of various forms and sizes, which they strung and wore as personal decorations, mostly, perhaps, in the shape of necklaces. Some beads are globular or compressed at the opposite ends (Fig. 200, serpentine, Santa Barbara County, California); others are of irregular shape, four-sided, notched at the circumference, etc. (Figs. 201 and 202, potstone, Pennsylvania). The collection contains a number of articles of ornamental character, presenting the shape of straight tubes, either cylindrical or somewhat swelling toward the middle. A well-drilled specimen consisting of silicious material (Fig. 203, Mississippi) measures nearly three inches in length. There are further in the collection several ornaments made of the red pipestone, or Catlinite, from the Coteau des Prairies in Minnesota. Though probably no great antiquity can be ascribed to them, they ought to be mentioned here, having been discovered in digging the Oriskany Canal in the State of New York. They may be attributable to the Iroquois. A typical form of these ornaments, which the writer had occasion also to notice outside of the National Museum, may be likened to a compressed slender pyramid, pierced in the longitudinal direction (Fig. 204). The occurrence of these objects of Catlinite in the State of New York, distant twelve or thirteen hundred miles from the red pipestone quarry, furnishes a strong evidence of a far-extended aboriginal trade.

Next must be mentioned objects of stone pierced for suspension, which were undoubtedly worn as breast ornaments, representing in many cases, it may be assumed, badges of distinction. A very fine specimen of the collection, somewhat resembling in outline a certain class of pierced tablets,

---

[34] Among the objects recovered by Mr. Paul Schumacher, during his explorations in Southern California, are many pipes of this description.

is ornamented with a border of dotted triangles (Fig. 205, trap rock, Connecticut). Another smaller specimen of kindred character, which is made of a flat sandstone pebble of oval outline, bears incised ornamental lines (Fig. 206, Rhode Island). Small oval or round pebbles of a compressed form, pierced with a hole for suspension, but otherwise left in their natural



ORNAMENTS, ETC.

state, are not uncommon (Fig. 207, Pennsylvania). A very remarkable small object, designed for suspension, consists of a shell of brown hematite of rather irregular outline, and shows no other modifications by art than a perforation at one extremity, and nine distinct incisions or notches at the other (Fig. 208, Virginia). These notches may have a significance,

denoting, perhaps, the number of animals of a certain species, or of enemies, killed by the wearer. Possibly the notches may form the enumeration of transactions of a more peaceable character. Similar "records" have been noticed among the prehistoric relics of Europe. Several objects in the collection, undoubtedly ornamental in their character, are shaped like a heart, which was among the North American Indians, as well as with other nations, the emblem of courage and of other manly qualities. One of the specimens (Fig. 209, argillaceous slate) is derived from an Ohio mound, where it was lying near the neck of the skeleton.

The Smithsonian collection possesses a series of the well-known curious relics intended to represent birds, the body, neck, head, and tail being clearly, though clumsily, indicated. The place of the eyes is occasionally marked by small bead-like elevations, sometimes, however, by unproportionally large knob-shaped projections. These figures stand on flat bases pierced at their extremities with diagonal holes which often exhibit traces of wear. The objects are generally made of soft stone, such as the often-mentioned green striped slate; yet porphyritic syenite and other hard substances sometimes form their materials. A characteristic specimen of the collection (Fig. 210, Pennsylvania) consists of striped slate. In this instance the eyes are indicated by small round protuberances. The object is marked along the neck, head, back, and tail with numerous notches, probably designed for ornament. It is evident that these relics were worn in some way (perhaps as amulets), and not used as knife-handles or for removing the husk of Indian corn, as has been suggested. The latest theory, based upon information received from an "aged Indian" is, that they were worn in olden times on the heads of Indian women, but only after marriage. One specimen of the collection, however, made of striped slate, and finished in every respect, though left without the diagonal holes, weighs two pounds and one ounce. It is incredible that a woman should have worn such a heavy object on her head for the sake of indicating her married state. Some very fine specimens in the National Museum, evidently belonging to the class under notice, are not imitations of the bird form, but are shaped alike at both perforated extremities (Fig. 211, striped slate, mound in Ohio).

The objects hitherto treated may be denominated ornaments with some degree of safety; but we include here, for want of a better designation, a few other classes of typical articles which possibly were intended for purposes of a useful rather than a decorative character. Among them are small carefully worked objects shaped like cylinders with inwardly curved side-surfaces. These objects are perforated lengthwise, or show at least the beginnings of perforations at both ends, and bear on their side-surfaces incised ornamental lines. The round (sometimes oval) flat extremities are likewise ornamented with engraved lines and dots, differing in their pattern from the decorations on the curved sides (Fig. 212, fine-grained argillaceous sandstone, Kentucky). The mode of their application has not been ascertained. It has been sug-

gested, on account of their concave side-surfaces, that they were tools employed in pressing ornamental lines on clay vessels while yet in a soft state. Upon trial, however, it has been found that the impressions produced by them on wet clay bear little analogy to the ornamentation which characterizes North American vessels, and hence their real purpose remains problematical for the present.

Among the relics of the former population are rings of stone and bone of different sizes, but similar in shape, being deeply grooved upon the outer edge, and pierced with eight equidistant small holes radiating from the centre. A cast in the collection (Fig. 213) is the fac-simile of such a ring, which was discovered in a mound not far from Chillicothe, Ohio. The cast, however, represents the object as perfect, whereas the original, formerly belonging to Dr. E. H. Davis, constitutes only one-half of the ring, which consists of a dark stone of medium hardness. In a former publication[35] the writer has suggested that these rings once formed parts of bow-drills by means of which the aborigines produced the perforations in pipes and other objects of stone. A well-made potstone ring of the collection (Fig. 214, Pennsylvania) is grooved around the circumference, but not pierced with lateral holes. The writer's view concerning the mode of application of these rings has been somewhat shaken by the fact that there is in the Smithsonian collection a similarly shaped ornamented ring of burned clay, which, owing to the fragility of its material, hardly could have been utilized in the indicated manner. Yet this clay ring, though resembling the described objects of stone, may have been designed for a totally different purpose.

20. Sculptures.—Though many of the objects treated in the preceding portion of this account may be called sculptures in view of the mode of their production, as for instance, stone pipes and other elaborately wrought articles of the same material, the expression is here reserved for a special class of aboriginal relics, among which imitations of the human body, or parts of it, are the most conspicuous.

There are in the collection numerous casts of Mexican stone masks and images, some of which probably have reference to the idol-worship of the Aztecs. The so-called masks are not uncommon in the United States, and casts of several of them may be seen in the collection, which also contains an original of this class from Rhode Island, representing a human face very rudely carved in sandstone. The eyes are represented by oval depressions, and a simple groove constitutes the mouth, while the nose is indicated by an insignificant elevation. The back part shows a rough fracture, a circumstance which renders it probable at least that the specimen is the detached facial portion of a very roughly worked imitation of the human head.

One of the most valuable objects in the National Museum (Fig. 215) is a

---

[35] "Drilling in Stone without Metal;" Smithsonian Report for 1868.

stone image, more than twenty inches in length and weighing thirty-seven pounds and four ounces, which was discovered in a cave near Strawberry Plains, sixteen miles east of Knoxville, Tennessee.[36] This remarkable relic, which is in a very good state of preservation, consists of crystalline limestone, the fracture of which can be seen at the back of the head, where the figure seems to have been detached from the rock out of which it was sculptured.

SCULPTURES.

It is possible, however, that the fracture indicates the former presence of some sort of handle or projection by which the image was carried or attached. The face shows a somewhat prominent nose and strongly marked brows, and the eyes consist of small oval cavities, while the mouth is ring-shaped, as in many Mexican representations of the human countenance. A groove extends across

[36] An account of the discovery of this image is given in the Smithsonian Report for 1870, p. 385.

the face between the nose and the mouth. The ears are unproportionally large. There is no body, properly speaking, but merely a kind of four-sided pedestal with a flat base on which the figure can stand. Its front side shows an appendage in the form of a small apron, which may, however, be intended to mark the male sex. Lastly, there are to be seen on both sides of the figure cavities, perhaps cut out in lieu of arms. The stone image just described is undoubtedly among the best of its kind thus far discovered within the United States, and compares favorably with kindred sculptures of Mexican or Central American origin.

The sculpture of a human head, cut almost in life size from a kind of limestone, is of interest, irrespectively of its intrinsic value, on account of having been in the possession of President Thomas Jefferson, while he lived at Monticello (Fig. 216). Although much mutilated, this relic is still sufficiently preserved to show the very creditable original workmanship. There is no exaggeration or deformity in any part of this head, which may be the likeness of some aged person with a deeply wrinkled face. A conical cavity in the base of the head evidently served for keeping it in position by some sort of support. There is another cavity in the back part of the head. The records of the Smithsonian Institution contain no information as to the place where it was found.

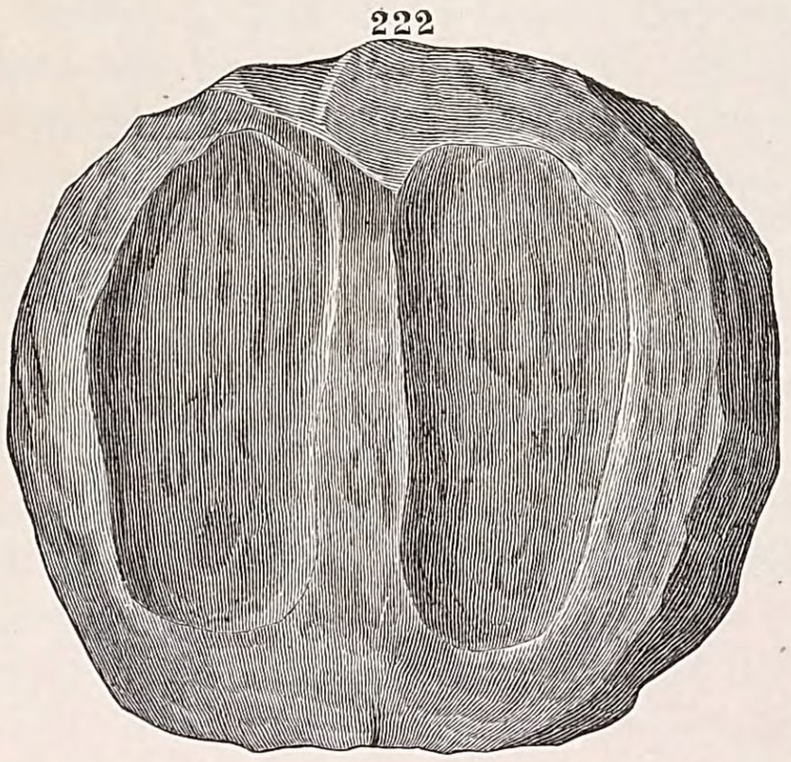
A curious little relic, made of a dark ferruginous stone, deserves notice on account of its grotesque character (Fig. 217, Ohio). The stone seems to be a natural formation, only modified by the carving of round eyes, a nose, and a wide open mouth.

It is well known that the Mexicans were far more advanced in the art of stone sculpture than the Indian tribes inhabiting higher latitudes of North America. There are in the collection some remarkable specimens of Mexican stone sculpture, among them a massive slab worked in the shape of a human head surmounted by an elaborate head-dress (Fig. 218). This relic, obtained from Tuspan, consists of some kind of volcanic rock, and may have belonged to a large figure. The head measures fifteen inches in length and is thirteen inches and a half broad. Small Mexican carvings in stone are not wanting in the National Museum; but as a description of all these specimens would occupy too much space, only a few will be noticed. There is, for instance, a flat carving of the human figure, in which the head alone, including a peculiar head-dress, is carefully, though not artistically, executed in its details, while the body merely forms a sort of appendage (Fig. 219). This relic consists of a greenish-gray stone, but not of the much-valued *chalchihuitl*. Another small specimen, measuring about an inch and a half in height, and carved from white alabaster, represents a human figure with a remarkable countenance and an unproportionally small body in the squatting posture characteristic of Mexican images (Fig. 220). The neck is pierced for suspension. Lastly, we would mention a carving in the shape of a death's head, not larger than a walnut, which was found among the ruins of Chichen Itza, in Yucatan.

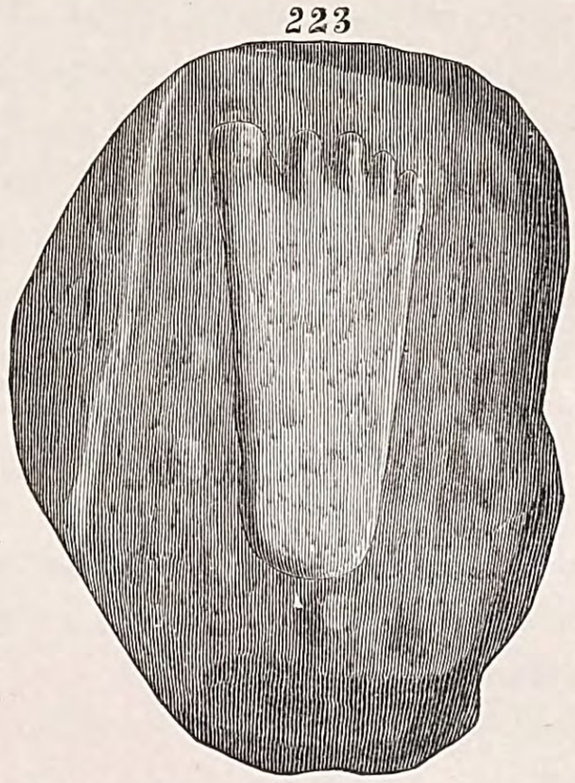
The flat back of this diminutive representation of a skull is perforated at each side with a diagonal hole. The material appears to be silicified wood.[37]

A very curious class of Indian sculptures are the imitations of human foot-prints which occur, cut on solid rocks and sometimes on boulders, in various parts of North America. These artificial tracks have elicited much unprofitable speculation, being considered by some as real impressions of human feet, and consequently dating from a time when the rocks were still in a state of softness. Though this view is now entirely abandoned by intelligent observers, there are some persons who, being unacquainted with the results of geology, still adhere to it. The foot-prints of man which are found, either isolated or in connection with other designs, on many rocks in the United States belong to the pictographical system of the aborigines, and probably relate to incidents worthy of their remembrance. Among the remarkable objects of the collection are three large stone slabs bearing impressions of human

222



223



SCULPTURED FOOT-TRACKS ($\frac{1}{6}$).

feet. On two of these slabs, which have been carefully cut out of the rocks, may be seen, respectively, two impressions of feet represented as being covered with moccasins of a pattern still in use among the Sioux and other western tribes (Fig. 222). These slabs consist of sandstone, probably pertaining to the carboniferous formation, and were obtained from the banks of the Missouri River. The third specimen of this description (Fig. 223) is a flattish block of quartzite (probably a boulder), which bears on one of its flat sides the impression of a naked foot, each toe being distinctly marked by a cavity of proportionate depth. The foot is surrounded by a number of cup-shaped depressions. This relic was obtained in Gasconade County, Missouri.

---

[37] This relic is described in the Smithsonian Report for 1871, p. 423.

Though perhaps not exactly in the right place, we would here mention a specimen of the collection, which was evidently employed in the manufacture of moccasins, being, in fact, a stone brought to the shape of a last, such as shoemakers use. This specimen, consisting of greenstone, was obtained in Arizona; but similar stone lasts also occur in the eastern parts of the United States. There is one in the collection of the Antiquarian Society at Worcester, Massachusetts, and the writer has seen specimens of the same character in Missouri and New Jersey.

II. COPPER.

It is well known that the North American Indians, at least those inhabiting the districts north of Mexico, lived in an age of stone at the time when their country became first known to the whites. They made, however, some use of native copper which they chiefly obtained from the region where Lake Superior borders on the northern part of Michigan. The traces of ancient aboriginal mining in that district were first noticed in 1847, and since that time the subject has been fully treated in various publications, more especially in a memoir by Mr. Charles Whittlesey, forming one of the Smithsonian Contributions to Knowledge.[1] Native copper from other parts of the United States likewise may have been utilized to some extent by the aborigines.[2] Copper implements, such as axes or celts, chisels, gravers, knives and points of arrows and spears, together with ornaments of various kinds, have been found in mounds and on the surface in different parts of this country, though not in great abundance, and it does not seem, therefore, that copper played an important part in the industrial advancement of the race. The aborigines lacked, as far as investigations hitherto have shown, the knowledge of rendering copper serviceable to their purposes by the process of melting, contenting themselves by hammering masses of the native metal with great labor into the shapes of implements or of objects of decoration. In short, they treated copper as malleable stone. Copper articles of aboriginal origin generally exhibit a distinct laminar structure, though quite a considerable degree of density has been imparted to the metal by continued hammering. It must be admitted, furthermore, that the natives had acquired great skill in working the copper in a cold state.[3] The first voyagers who visited North America (Verazzano, the Knight of Elvas, Captain John Smith, Robert Juet, and others) saw copper ornaments and other objects made of this metal in the possession of the Indians, and there can be little doubt that the manufacture

---

[1] "Ancient Mining on the Shores of Lake Superior," Washington, 1863.

[2] It is sometimes met, in pieces of several pounds' weight, in the valley of the Connecticut River, and also in the State of New Jersey, probably originating in both cases from the red sandstone formation. Near New Haven, Connecticut, a mass was found weighing ninety pounds.

[3] Mr. J. W. Foster describes and figures in his "Prehistoric Races of the United States," North American copper implements, which, as he thinks, were produced by casting. The subject will require further investigation.

of such articles was still going on at the time of the discovery of the North American continent.[4]

The objects of copper found in the United States, as mentioned, embrace implements and weapons as well as ornaments, all of which are represented in the collection by originals and a number of copper casts. First should be noticed the celt-shaped objects, which bear a great resemblance to corresponding bronze implements in European collections. There is, for instance, a well-shaped celt derived from a mound near Lexington, Kentucky, which has been exposed to the action of fire, as seen by pieces of charcoal and cinders still adhering to it (Fig. 224). The implement and the cinders are covered with green rust. From the same mound were taken some axe-shaped, though perfectly blunt objects, terminating at the broader end in lateral curved appendages (Fig. 225). Their significance has not yet been ascertained. Among the copper celts of the collection are several smaller specimens of good workmanship, one of them (Fig. 226) taken from a mound near Savannah, Tennessee. The most beautiful article of a wedge-like character is a kind of chisel with an expanding, strongly curved edge, which shows a slight concavity, imparting to the implement almost the character of a gouge (Fig. 227, back view, New York). The upper surface is nearly even, but the back part presents, as it were, two faces, which join in the middle, forming a longitudinal ridge.

There are further to be mentioned weapons of the arrow and spear-head form, of elongated shape, and terminating opposite the points in stems, either truncated or pointed (Fig. 228, Lake Superior district; Fig. 229, Vermont). A well-made crescent-shaped implement with a tolerably sharp convex edge may be considered as a knife (Fig. 230, Fond du Lac, Wisconsin). If it had been a gorget, as has been suggested, it probably would show the usual holes for suspension. One of the most interesting copper tools of the collection, perhaps a unique relic, is a slender awl still inserted in its bone handle (Fig. 231). This specimen, which was found on Rhea's Island, Loudon County, Tennessee, reminds one of corresponding iron tools in use at the present day. A copper sinker from Ohio (Fig. 232), analogous in shape to a certain class of stone objects previously described, deserves particular notice.

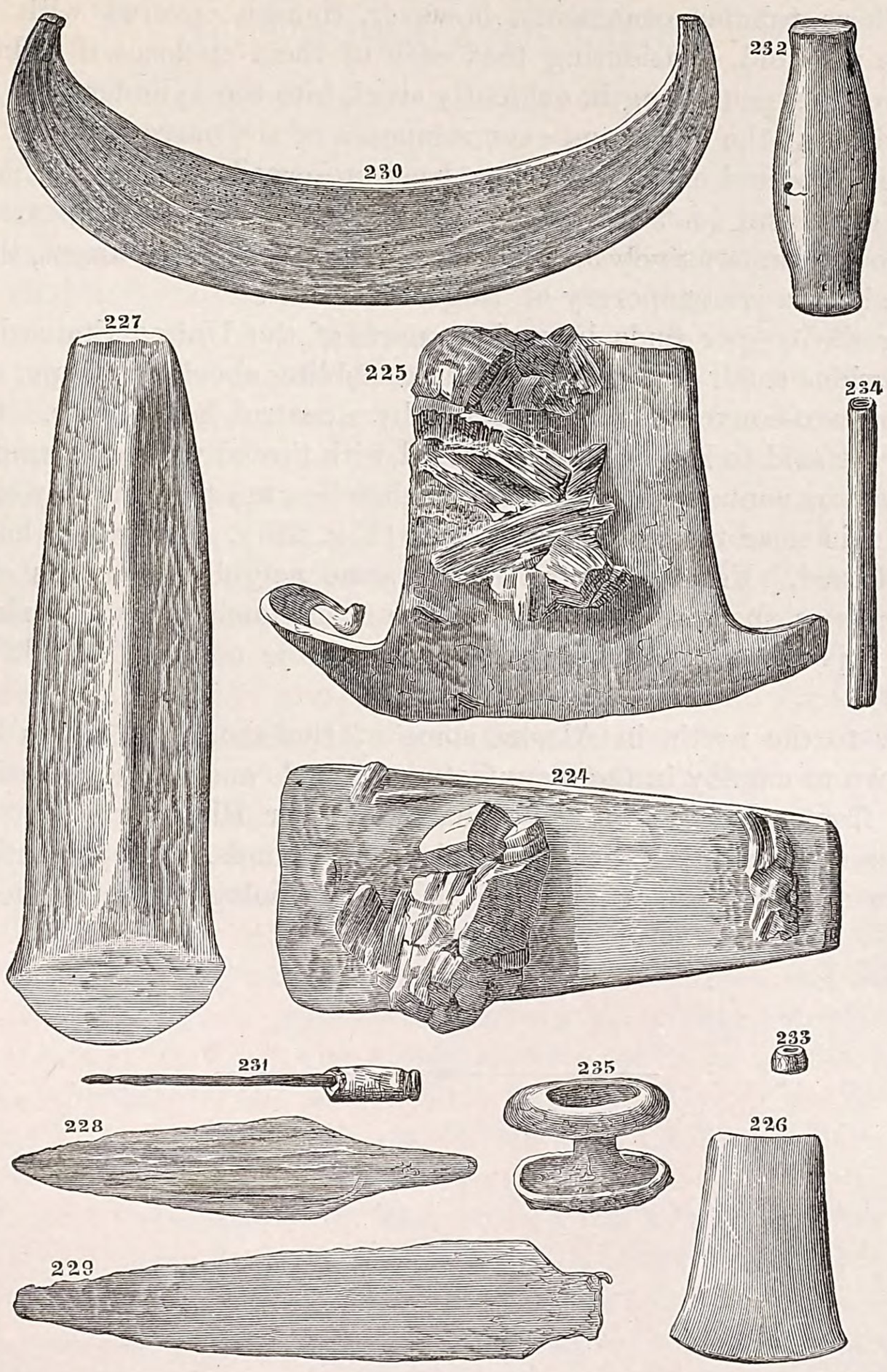
Passing over to the copper ornaments of the collection, we will first mention

---

[4] Traces of wrought silver have been discovered among the aboriginal relics, but they are so exceedingly scanty that the technical significance of this metal hardly can be taken into consideration. Native silver, it is well known, occurs interspersed in small masses in the copper of the Lake Superior district, and from that source the Indians doubtless derived the small amount of silver used by them. Gold was seen by the earliest travelers in small quantities (in grains) among the Florida Indians; yet, to the writer's knowledge, no object made of gold, that can with certainty be attributed to the aborigines (north of Mexico), has thus far been discovered. Squier and Davis found no gold during their extensive explorations in Ohio. The discovery of small aboriginal relics of gold, however, would not be surprising, considering that this precious metal occurs in some of the districts of the United States formerly occupied by the Indian race.

It is not probable that the natives understood the melting of lead; but pieces of galena frequently occur in mounds, and there is in the Museum a bead (resembling the original of fig. 200) skillfully made of that ore.

armlets and bracelets, consisting of hammered rods about the thickness of a lead-pencil, and bent into a circular or oval form until their ends meet. These specimens were obtained from mounds in Indiana and West Virginia. Similar



COPPER IMPLEMENTS AND ORNAMENTS ($\frac{1}{2}$).

bronze ornaments are met in collections of European antiquities. Copper beads are well represented in the collection. They consist of coarse wire or small pieces of copper closely wound and hammered together (Fig. 233, mound in Ohio), or, more generally, of strips of copper sheet bent into the

form of cylinders with overlapping, though never soldered, edges. These cylindrical beads are sometimes so long that they may be called tubes, as, for instance, a number of specimens more than three inches long, which were discovered in an Indian grave near Newport, Rhode Island (Fig. 234). These tubular ornaments, however, though covered with verdigris, cannot be very old, considering that each of them encloses a tightly fitting piece of reed of equal length, evidently stuck into the cylinders for diminishing the width of the holes, and even remnants of the narrow thong by which they were connected or attached have been preserved. It is probable that the tubes are of Indian (not European) workmanship, and their appearance bears witness to a comparatively recent origin. For aught we know, the wearer may have been a contemporary of Roger Williams.

Among the copper finds in various parts of the United States have been noticed curious small objects somewhat resembling spools in shape, consisting of two concavo-convex discs connected by a central hollow axis. Objects of this class are said to have been discovered with thread wound around the axis. The collection contains a number of such relics, most of which were derived from mounds near Savannah, Tennessee (Fig. 235). Their use has not yet been explained. From a mound in the same neighborhood was obtained a piece of copper sheet resting on a fragment of much decayed bark or grass matting, impregnated with the green rust of the copper (No. 9882 of the collection).

Farther to the north, in Alaska, some of the aboriginal tribes have long been known to employ in the manufacture of tools and weapons native copper obtained from a locality on the Atna or Copper River, where it occurs in rolled masses, sometimes weighing thirty-six pounds. Copper articles made by natives of Alaska may be seen in the ethnological department of the Museum.

III. BONE AND HORN.

Although, generally speaking, implements of bone and horn of early date are not very abundant in North American collections, they are represented by many characteristic specimens in the National Museum, the objects of bone outnumbering those of horn. The teeth and claws of wild animals, it will be seen, were chiefly made into ornaments testifying the valor of their wearers. Piercers obtained from mounds, shell-heaps, etc., form the most numerous class of bone tools (Fig. 236, ancient village site on one of the Aleutian Islands; Figs. 237 and 238, mounds in Union County, Kentucky). These perforators bear a striking resemblance to those found among the relics of the ancient lake-men of Switzerland. A beautiful bone needle of somewhat recent appearance deserves special notice (Fig. 239, San Miguel Island, California). This needle is not pierced with an eye, but exhibits in its stead two grooves for fastening the thread. There are in the collection several bone harpoon-heads, barbed on one side, and pierced with a hole for attachment (Fig. 240, grave in Michigan; Fig. 241, Alaska).[1] Somewhat similar armatures of bone, derived from the caves of the Dordogne, in Southern France, are described by Lartet and Christy in the "Reliquiæ Aquitanicæ." Speaking of fishing implements, we would mention well-wrought bone hooks from Santa Cruz Island, California (Fig. 242). The shanks of the hooks are still covered with a coating of asphaltum, evidently applied for securing the line. Contrary to the general rule, the barbs in these hooks are placed on the outer side.

California, further, has furnished a number of whistles apparently made of bird bones and provided with a blowing-hole not in the middle, but placed nearer one extremity of the hollow bone than the other (Figs. 243 and 244, Mare Island). Other curious objects derived from California, more especially from the Santa Barbara Islands, are cups very ingeniously hollowed out from the vertebræ of cetaceans (Fig. 245, Santa Cruz Island). These cups are partly filled with asphaltum, apparently prepared to serve as paint.[2]

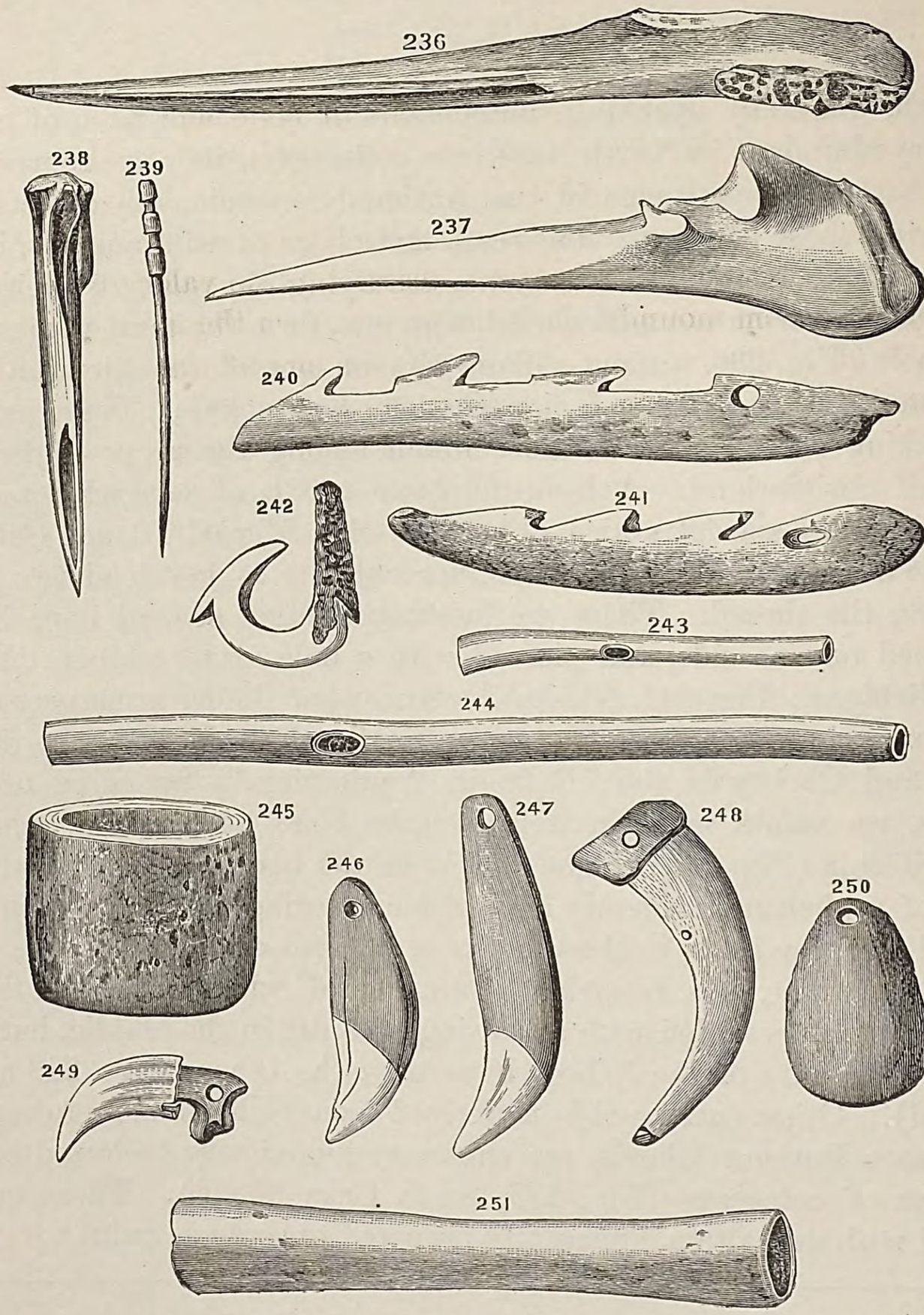
---

[1] Copper harpoon-heads of the same shape (barbs on one side, hole for attachment) may be seen in the collection. They were obtained from Alaska, and belong to the modern fishing gear of the natives.

[2] Since the above was written, the collection has been enriched with many articles of bone and horn, obtained from Californian graves by Mr. Paul Schumacher. Among them we mention large wedges of elk horn and whalebone, polishing tools resembling paper-folders, rather ponderous knife-shaped articles of whalebone, and, lastly, fifes with four holes.

Numerous relics of bone and horn, collected by Mr. F. H. Cushing in the State of New York, lately have been added to the collection. They comprise perforators of various forms and sizes, harpoon-heads, detached prongs of deer horn, more or less polished at their points, and probably employed as smoothing tools, modified beavers' teeth, and various other objects.

Like other races of hunters, the aborigines of North America were in the habit of perforating the teeth of wild animals they had killed, and of wearing them as trophies in the shape of necklaces or pendants. The teeth of bears, it seems, formed the most favorite ornaments of this kind, being either left in their natural state and merely pierced at the root (Fig. 246, New York), or



IMPLEMENTS AND ORNAMENTS OF BONE ($\frac{1}{2}$).

brought into a more regular shape by grinding and smoothing, like a number of specimens from Alaska (Fig. 247), which may, however, belong to a comparatively recent period. Modern Indians, it is well known, wear as tokens of their prowess necklaces made of the claws of the grizzly bear (Fig. 248, Rocky Mountains, recent), and a number of drilled claws of the panther

(*Felis concolor*), derived from California, were probably used in a like manner by the aborigines of that part of North America. In these specimens the perforation passes through the bony part (last phalanx) of the animal's claw (Fig. 249, Santa Cruz Island). A very curious ornament (?) is the pierced epiphysis of a long bone of some animal, probably a deer (Fig. 250, mound in Kentucky).

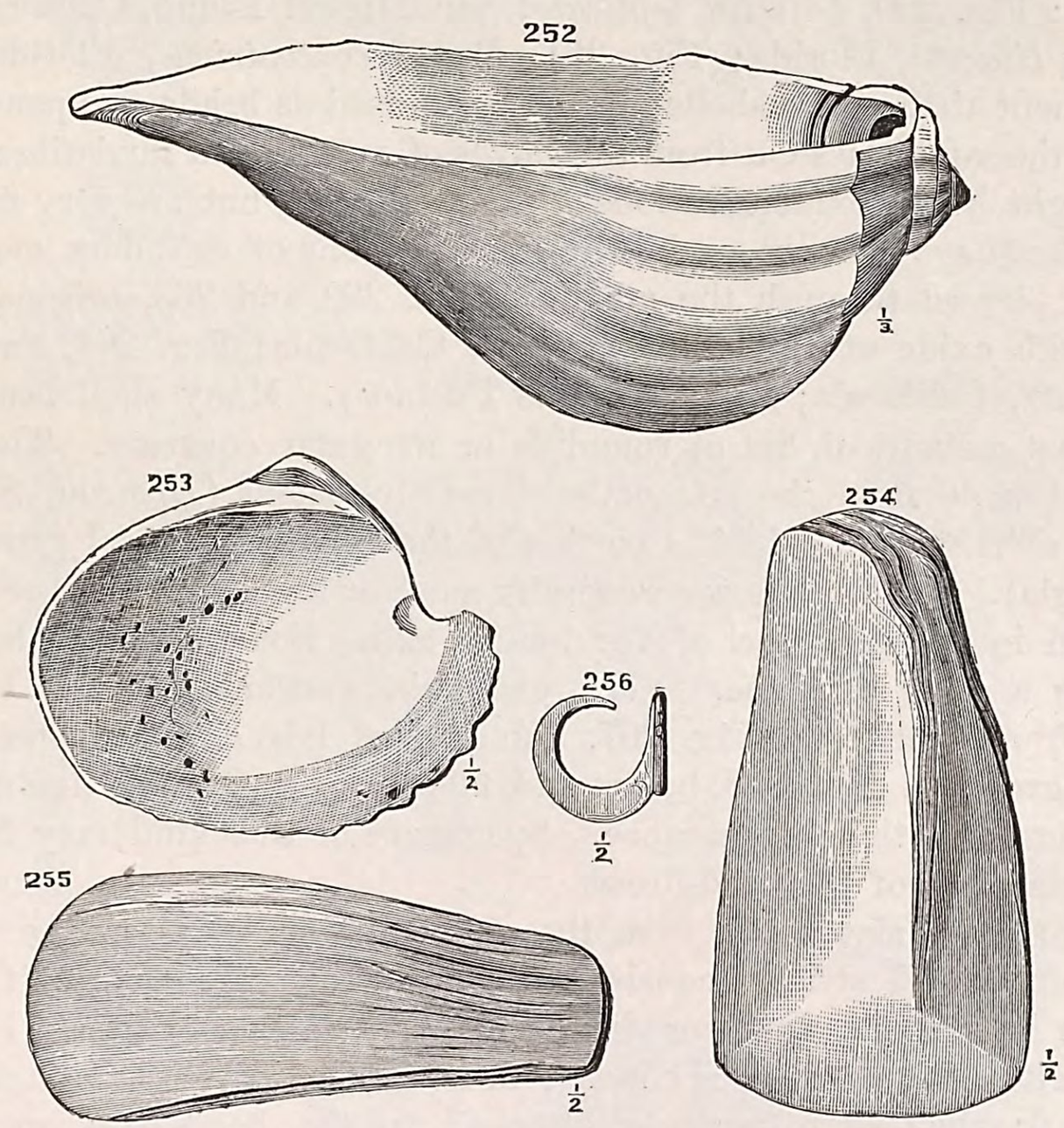
Besides the objects or classes of objects of bone thus far mentioned there are other specimens, either in a fragmentary state or entire, the purposes of which have not yet been explained. As an example may be selected a wrought hollow bone somewhat expanding at both ends (Fig. 251, Santa Cruz Island, California). It is not attempted to assign a name to this object, which may have been a receptacle or a part of a tool, an unfinished whistle, or, perhaps, an appendage to the dress. There is a possibility, too, that it was the sucking-instrument of a medicine man, made to replace one of the stone tubes which are known to have been employed among the Californians in curing the sick.

IV. SHELLS.

Shells being above other natural productions particularly fitted to be made into ornaments, it is not surprising that they were employed for that purpose by primitive man of all ages and in all parts of the world. The North American tribes utilized, to a great extent, the shells of the sea-coast as well as those of their rivers, and there can be no doubt that marine shells formed an article of exchange in former times, considering that they have been met among aboriginal relics far in the interior of the country. This kind of traffic has been taken up at a later period by white traders, who derived great profit in selling fine specimens to the tribes inhabiting the inland. It is known that the Indians sometimes paid for a fine shell fur to the value of thirty or forty dollars, and more. Shells even seem to have been looked upon with a kind of superstitious reverence, and indications are not wanting that they sometimes played a part in their religious ceremonies. Shells, however, were not exclusively converted into ornaments, or preserved as objects of value, but were also employed as utensils, more especially as vessels, an application for which large species, such as *Cassis* and *Bysicon* seemed particularly adapted. The Florida Indians, when first seen by Europeans, used large shells as drinking-cups, and when a chieftain died, the shell which he had used during lifetime (*crater e quo bibere solebat*) was placed on the apex of the mound that marked his place of burial.[1] A large *Bysicon perversum* (*Pyrula perversa*) made into a drinking vessel by the removal of the inner whorls and other modifications may be seen in the collection (Fig. 252, mound in Indiana). Valves of *Unio*-shells, somewhat altered by art, in order to be handled with greater convenience, formed very serviceable spoons (Fig. 253, mound in Kentucky). There are several utensils of this kind in the National Museum. Among other objects designed for useful purposes should be mentioned celts or adzes made of heavy shells, and identical in shape with corresponding tools of stone. Such shell implements have been found on the southern coasts of the United States, especially in Florida, but also at a considerable distance from the sea-board (Fig. 254, Florida; Fig. 255, Kentucky). It further appears that the Florida Indians applied shells of the *Bysicon perversum* as clubs or *casse-têtes* by adapting them to be used with a handle, which was made to pass transversely through the shell. This was effected by a hole

[1] De Bry, *Brevis Narratio* (Vol. II, Frankfort on the Main, 1591), Plate 40.

pierced in the outer wall of the last whorl in such a manner as to be somewhat to the left of the columella, while a notch in the outer lip, corresponding to this hole, confined the handle or stick between the outer edge of the lip and the inner edge of the columella. The anterior end of the canal, broken off until the more solid part was reached, was then brought to a cutting edge, nearly in the plane of the aperture. A hole was also made in the posterior surface of the spire behind the carina in the last whorl, evidently for receiving a ligature by means of which the shell was more firmly lashed to the handle.



UTENSILS OF SHELL.

Shells prepared in this manner have been found on the shore of Sarasota Bay in Florida, a locality where stone for manufacturing axes is wanting. There are several of these modified shells in the collection.

California has furnished a number of well-wrought fish-hooks, made of the shell of *Haliotis*, which strongly resemble articles of the same description in use among the islanders of the Pacific (Fig. 256, Santa Cruz Island). The Californian coast-tribes, it should be stated, employed shells in various ways, chiefly, however, in the production of objects of personal adornment, which will be considered hereafter. That they utilized the unaltered shells of *Haliotis*, *Cardium*, *Pecten*, *Patella*, *Spondylus*, and *Panopœa* as the receptacles

for asphaltum (paint?) is demonstrated by a number of shells still filled with that substance, which were obtained from graves on the Santa Barbara group of islands, and but lately added to the collection of the National Museum.

The Indian shell ornament in its simplest form consists of entire marine shells, such as species of *Marginella*, *Natica*, *Pecten*, *Oliva*, *Strombus*, etc., and of valves of fresh-water mollusks (chiefly of the *Unio* kind), which, after being truncated at the apex, or pierced with a hole, could be strung together (forming necklaces, bracelets, etc.) or suspended at once without further preparation (Fig. 257, *Strombus pugilis*, shell-heap, Florida;[2] Fig. 258, *Unio*, Tennessee; Fig. 259, *Olivella biplicata*, San Miguel Island, California; Fig. 260, *Oliva literata*, Florida; Fig. 261, *Pecten concentricus*, Florida).[3] Far more frequent than entire shells pierced to be used as beads and pendants are objects of the same class cut from the valves of marine and fluviatile mollusks. The wrought beads exhibit various forms and sizes, but are very frequently found in the shape of more or less regular sections of cylinders, more rarely of prisms, pierced through the middle (Figs. 262 and 263, originals partly covered with oxide of iron, Dos Pueblos, California; Fig. 264, Santa Barbara County, California; Fig. 265, Dos Pueblos). Many shell beads, however, are not cylindrical, but of roundish or irregular contours. The largest beads were made from the columellæ of massive shells (*Bysicon*, *Strombus*) and many of these still exhibit a portion of the columellar spiral groove (Fig. 266, Georgia). Such beads are generally more or less cylindrical, or globular, and drilled in the direction of the longer axis. Some taper at both ends, resembling a cigar in shape. Very remarkable specimens of this kind were obtained from California (Fig. 267, San Miguel Island). In some of them the spiral groove is deepened by art and filled with asphaltum, doubtless with a view to improve their appearance. Specimens of this kind may have constituted some part of the head-dress.

The aborigines also made from the columellæ of large marine univalves peculiar pin-shaped articles, consisting of a more or less massive stem which terminates in a round knob or disc (Fig. 268, Florida). There have been found specimens measuring six inches in length. Their destination is as yet unexplained; they were, perhaps, attached to the head-dress, or worn as ornaments in some other way.

Of particular interest are the wampum-beads, which represented the *money* among many tribes of aborigines, forming also valued ornaments (necklaces, bracelets, etc.), and constituting the strings and belts of wampum,[4] which played such a conspicuous part in Indian history, being exchanged at the

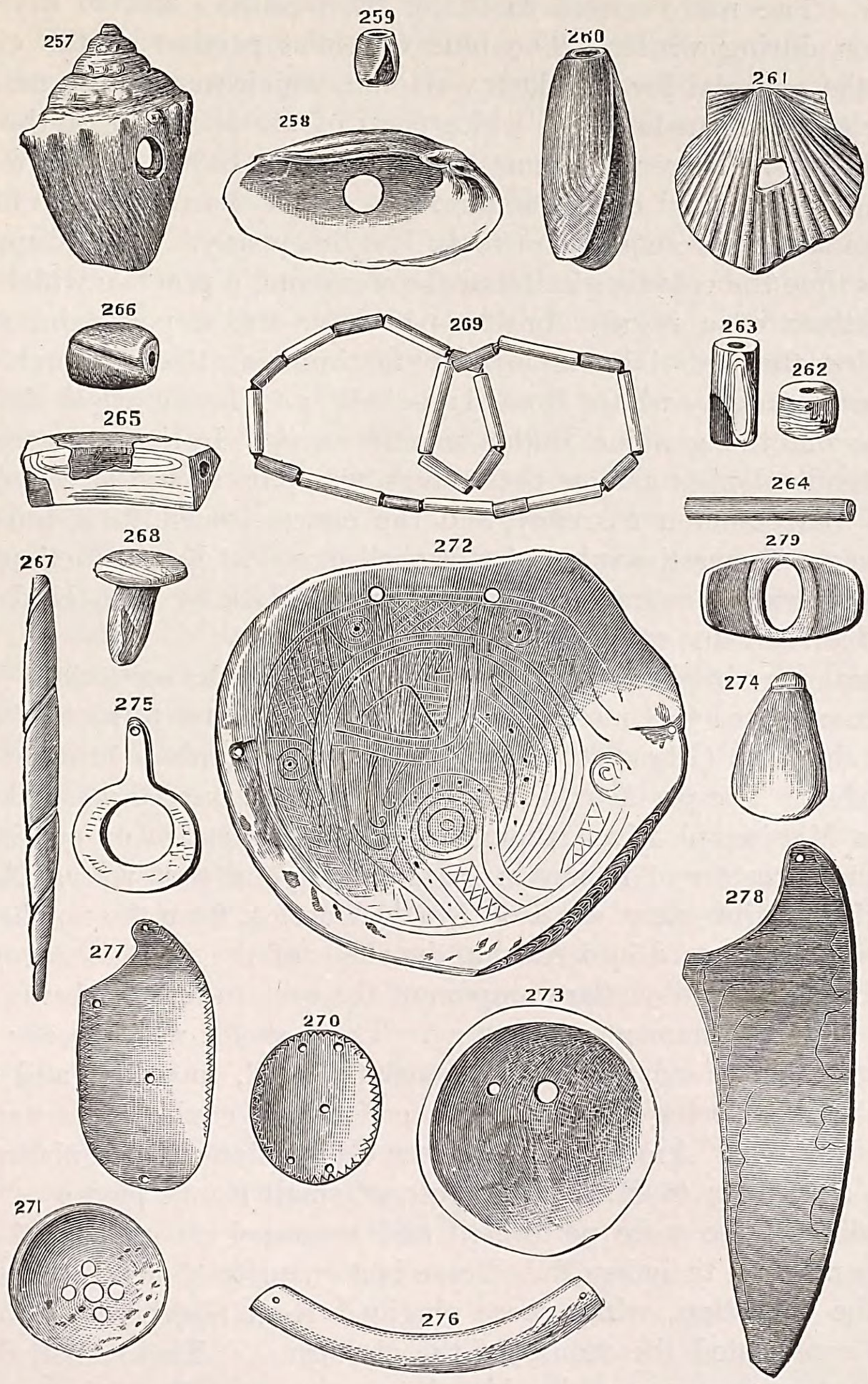
---

[2]This shell is pierced with a second hole noticeable in the drawing. The size of the holes and the weight of the shell render it possible, that it was not used as an ornament, but for some other purpose. It may have been a net-sinker.

[3]Similarly pierced shells of *Pecten* are strung together and used as rattles by the natives of the Northwest Coast.

[4]The word "wampum" is derived from *wompam*, signifying *white* in the language of the Narragansetts.—Roger Williams: "A Key into the Language of America," Providence, 1827, p. 130.

conclusion of peace and on other solemn occasions, in order to ratify the transaction, and to perpetuate the remembrance of the event. The term "wampum" is often applied to shell beads in general, but might with propriety



SHELL ORNAMENTS ($\frac{1}{2}$).

be confined to a certain class of cylindrical beads, usually one-fourth of an inch long, but sometimes much longer, and drilled lengthwise, which were chiefly manufactured from the shells of the common hard-shell clam (*Venus*

mercenaria). This bivalve, occurring, as every one knows, in great abundance on the North American coasts, formed an important article of food of the Indians living near the sea, a fact demonstrated by the enormous quantities of castaway clam-shells, which form a considerable part of North American shell-heaps. The natives used to string the mollusks and to dry them for consumption during winter. The blue or violet portion of the clam-shells furnished the material for the dark wampum, which was held in much higher estimation than that made of the white parts of the shells, or of the spines of certain univalves. Roger Williams states that the Indians of New England manufactured white and dark wampum-beads, and that six of the former and three of the latter were equivalent to an English penny.[5] Yet, it appears that even at his time the colonists imitated the wampum, a practice which assumed the proportions of a regular business in later times, porcelain, glass, and enamel being the materials employed in facsimilizing them. Much wampum, however, was made by whites from clam-shells, and hence arises the difficulty of singling out the genuine Indian manufactures. In the intercourse of the New England colonists among themselves, wampum served at certain periods instead of the common currency, and the courts issued, from time to time, regulations for fixing the value of this shell-money. In transactions of some importance it was measured by the fathom, the dark or blue kind generally being double the value of the white.

There are many beads and strings of wampum in the collection; yet owing to the circumstances just mentioned, it is no easy matter to recognize the real Indian productions (Fig. 269, Upper Missouri; doubtless brought there by way of trade). The peculiar kind of wampum here treated was chiefly in use east of the Mississippi River, though shells, either entire or cut into beads, assumed the character of money in parts far beyond that river. Among the tribes of the northwestern coast of North America, from the northern border of California far upward into Alaska, the shells of the *Dentalium* represented, until within the latest time, the wampum of the eastern regions, being used, like the latter, both as ornament and money. These shells, which occur in certain places of the Pacific coast, may be likened to small, tapering, and somewhat curved tubes, and, being open at both ends, they could be strung without further preparation. Among the Southern Californians the circulating medium consisted, according to H. H. Bancroft, of small round pieces of the white muscle-shell. These were perforated and arranged on strings, the value of which depended on their length. There is a quantity of small perforated shell discs in the collection, which were obtained from Southern California, and may have constituted the money of the aborigines. These small discs, however, are concavo-convex, and evidently were not cut from the muscle-shell.[6]

---

[5] A Key, etc., p. 128.

[6] It appears probable that among the natives of that region the *Olivella biplicata* and the land-shell *Helix strigosa* served as substitutes for money. Mr. Paul Schumacher discovered on San Nicolas Island deposits of these shells, which had been stored in the sandy ground, and formed diminutive hillocks, having been uncovered by the action of the winds.

Returning to the objects of shell of purely ornamental character, we would mention flat discs with a central hole, which were probably not strung like the ordinary beads, but arranged in some other way. Quite a number of these discs, made of fluviatile shells, were found some years ago in the now leveled "Big Mound" at St. Louis. Some of them measure more than an inch in diameter. The collection contains similar discs perforated with several holes, and sometimes ornamented around the circumference, which were obtained from California (Figs. 270 and 271, Santa Cruz Island). They are cut from the *Haliotis*-shell. Increasing in size, the shell discs assume the character of gorgets, which were worn suspended from the neck, or attached in some way to the dress. They are round or oval plates, from two to four inches and more in diameter, on which designs are engraved or cut through. The ornamentation is traced on the concave side, which formerly exhibited the shining part of the shell. The collection contains, among other specimens, an ornamented shell gorget from Tennessee, which is now perfectly bleached by age, but evidently formed a beautiful decoration while in its original state (Fig. 272). It is pierced with two holes for suspension and with two lateral holes, probably intended for further fastening. The ornamental tracing on this specimen bears a striking resemblance to the pattern engraved on a shell gorget figured on Plate XXX of the "Antiquities of the Southern Indians" by Charles C. Jones. The similarity in the designs of such shell plates has been pointed out by the late Professor Jeffries Wyman.[7] Some shell discs are ornamented with regularly disposed perforations, and others are entirely plain, showing only the holes for suspension (Fig. 273, mound in Kentucky). Such specimens, whitened by having lain for centuries in the ground, offer now little attraction to the eye, though they must have constituted beautiful ornaments when exhibiting the pearly coating of the shell.

The round or oval gorgets just described are made from *Bysicon*-shells, which were also employed in the production of another class of large ornaments, representing very rudely executed human faces. They are pear-shaped, from five to six inches long, and about four inches wide in the broadest part, where they are pierced with two small holes, evidently intended for eyes. A slight elevation marks the nose, below which there is sometimes seen a third hole indicating the mouth. In addition, the surface is often ornamented with incised lines. The decoration in these typical objects, which probably served as gorgets, is executed on the convex part of the shell. They have been found in mounds of Tennessee, and elsewhere.

Shell-matter was wrought into a variety of other ornaments designed for suspension or attachment. In most instances the fastening was effected by perforations, but exceptionally by grooves, as in the case of a small pendant, pear-shaped in outline, which may have formed an appendage to a string of

---

[7] The tracing often shows the figure of a coiled rattle-snake.—Fifth Annual Report of the Trustees of the Peabody Museum, Boston, 1872, p. 17.

beads (Fig. 274, New York). The Southern Californians chiefly employed the nacreous *Haliotis*-shell as the material for their ornaments, which are abundantly represented in the collection of the National Museum. There are, for instance, ornaments shaped like a ring, provided with a pierced stem projecting from its circumference (Fig. 275, Santa Cruz Island). Such objects may have been worn as ear-pendants. Another class of Californian ornaments cut from the *Haliotis*, consists of somewhat crescent-shaped pieces truncated at their extremities, and pierced for suspension (Fig. 276, Dos Pueblos). They may have been worn as gorgets. Still other objects of decoration (?) are cut in a variety of hardly definable, irregular forms, which present, however, generally rounded outlines (Fig. 277, Santa Cruz Island; Fig. 278, Dos Pueblos). The holes drilled through them characterize them as objects designed to be suspended or attached.[8] The Californian specimens here treated, although stained by age, retain much of their iridescent nacre, and a more recent origin must be ascribed to them than to the described shell objects taken from mounds in the eastern portion of the United States. Lastly, there should be noticed among the Californian specimens a peculiar class of relics cut from the shell of *Lucapina crenulata*, and approaching in shape an oval, from which the middle portion has been removed, leaving an oval hole (Fig. 279, San Miguel Island). As yet it is not known whether articles of this description formed ornaments, or were employed in a more profitable manner.

---

[8] Mr. Paul Schumacher figures in the manuscript report of his explorations in Southern California drawings of worked and pierced pieces of shell, somewhat resembling the original of Fig. 278. These objects, he thinks, were fastened to the end of fishing-lines to attract the prey, in accordance with the present mode of trolling with a spoon-hook.

V. CLAY.

In treating of North American manufactures of clay, it appears proper to begin with those of a useful character, that is, with the vessels employed by the aborigines for culinary and other purposes. Before the advent of the whites, pottery formed an important branch of industry among the eastern Indians, who discovered, however, soon after their contact with the whites the superiority of the metallic vessels which they obtained in trafficking with them, and consequently ceased to manufacture pottery at a very early period. On the other hand, many tribes in the Western Territories (New Mexico, Arizona, Utah, etc.) still practise the ceramic art, producing earthenware of a very creditable character, numerous specimens of which are preserved in the collection of the National Museum. On a rough estimate, it may be said that the art of pottery, as practised in the aboriginal fashion, has become extinct in the eastern half of the United States. There is indeed, still some pottery made by Indians in that part of the Union, but it hardly can be called Indian pottery. Thus, the Catawba Indians, residing upon the banks of the Catawba River in York County, South Carolina,—an insignificant remnant of a once powerful tribe—still make a kind of unglazed pottery, not according to aboriginal taste, but in close imitation of the ceramic productions of the whites. Instead of bowls and cooking-pots of the Indian type, they manufacture cups and saucers, tea-pots, pitchers and basins, flower-pots, and other species of earthenware of patterns altogether distinct from the models in vogue among their forefathers. The writings of early and even comparatively modern authors on North America are not deficient in particulars relating to the art of pottery among the natives occupying the eastern area of the present United States. According to their statements, those tribes were most advanced in the manufacture of earthenware, who inhabited the large tracts of land formerly called Florida and Louisiana, which comprise at present the Gulf States and those adjacent to the Lower Mississippi, and their testimony is fully corroborated by the character of such specimens of pottery from those parts as have escaped destruction and are preserved in the collections of the country. Though the sites of ancient Indian settlements are frequently strewn with innumerable fragments of pottery, entire vessels of early date have almost exclusively been obtained from mounds and other burial-places, where they had been deposited by the side of the dead, either for holding food, or designed to be of service to the deceased in his fancied world of spirits.

The manufacture and character of Indian pottery have been described by Du Pratz, Dumont, Adair, Loskiel, and various other authors. "The women," says Du Pratz, in treating of the pottery of the natives of Louisiana, "make pots of an extraordinary size, jars with a small opening, bowls, two-pint bottles with long necks, pots or jugs for preserving bear oil, holding as much as forty pints, and, finally, plates and dishes in the French fashion."[1] Dumont, who likewise describes the manners of the Indians of Louisiana, has left a more minute account of the method they employed in making earthenware. He says: "After having amassed the proper kind of clay and carefully cleaned it, the Indian women take shells which they pound and reduce to a fine powder; they mix this powder with the clay, and having poured some water on the mass, they knead it with their hands and feet, and make it into a paste, of which they form rolls six or seven feet long and of a thickness suitable to their purpose. If they intend to fashion a plate or a vase, they take hold of one of these rolls by the end, and fixing here with the thumb of the left hand the centre of the vessel they are about to make, they turn the roll with astonishing quickness around the centre, describing a spiral line; now and then they dip their fingers in the water and smooth with the right hand the inner and outer surface of the vase they intend to fashion, which would become ruffled or undulated without that manipulation. In this manner they make all sorts of earthen vessels, plates, dishes, bowls, pots, and jars, some of which hold from forty to fifty pints. The burning of this pottery does not cause them much trouble. Having dried it in the shade, they kindle a large fire, and when they have a sufficient quantity of embers, they clean a space in the middle, where they deposit their vessels and cover them with charcoal. Thus they bake their earthenware, which can now be exposed to the fire, and possesses as much durability as ours. Its solidity is doubtless to be attributed to the pulverized shells which the women mix with the clay."[2] Adair, more than a century ago a trader with the tribes who occupied the southern portion of the present Union, states as follows: "They make earthen pots of very different sizes, so as to contain from two to ten gallons; large pitchers to carry water; bowls, dishes, platters, basins, and a prodigious number of other vessels of such antiquated forms as would be tedious to describe and impossible to name. Their method of glazing them is, they place them over a large fire of smoky pitch-pine, which makes them smooth, black, and firm. Their lands abound with proper clay for that use."[3] A very good account relating to the art of pottery, as formerly practised by the tribes of the Mississippi Valley, is given by Hunter: "In manufacturing their pottery for cooking and domestic purposes," he says, "they collect tough clay, beat it into powder, temper it with water, and then spread it over blocks of wood, which have been formed into shapes to suit their convenience or fancy. When sufficiently dried, they are removed

---

[1] Du Pratz: *Histoire de la Louisiane*, Paris, 1758, Vol. II, p. 179.
[2] Dumont: *Mémoires Historiques sur la Louisiane*, Paris, 1753, Vol. II, p. 271.
[3] Adair: History of the American Indians, London, 1775, p. 424.

from the moulds, placed in proper situations, and burned to a hardness suitable to their intended uses. Another method practised by them is, to coat the inner surface of baskets, made of rushes or willows, with clay, to any required thickness, and when dry, to burn them as above described. In this way they construct large, handsome, and tolerably durable ware; though latterly, with such tribes as have much intercourse with the whites, it is not much used, because of the substitution of cast-iron ware in its stead. When these vessels are large, as is the case for the manufacture of sugar, they are suspended by grape-vines, which, wherever exposed to the fire, are constantly kept covered with moist clay. Sometimes, however, the rims are made strong, and project a little inwardly quite round the vessel so as to admit of their being sustained by flattened pieces of wood slid underneath these projections and extending across their centres."[4]

It would be erroneous to suppose the art of manufacturing clay vessels had been in use among all the tribes spread over this widely extended country; for, though exhibiting much general similarity in character and habits, they differed considerably in their attainments in the mechanical arts. Some of the North American tribes, who did not understand the fabrication of earthen vessels, were in the habit of cooking their meat in water set to boiling by means of heated stones which they put into it, the receptacles used in this operation being large wooden bowls or troughs, water-tight baskets, or even the hides of animals they had killed. The Assineboins, for example, cooked in skins, as described by Catlin.

Generally speaking, the aborigines of North America acquainted with the art of pottery formed their vessels by hand, modeling them sometimes in woven baskets of rushes or willows, and were, as far as we know, unacquainted with the art of glazing. They mixed the clay used in their pottery either with pounded shells or sand, or with pulverized silicious rocks; mica also formed sometimes a part of the composition. In many cases, however, the clay was employed in an unmixed state. Their vessels were often painted with ochre, producing various shades, from a light yellow to a dark brown, or with a black color. They decorated their pottery with incised straight or curved lines or combinations of lines and dots, and embellished it also by notching the rims, or surrounding them on the outside with studs or in various other ways. The vessels exhibited a great variety of forms and sizes, and many of them had rounded or convex bottoms. The aborigines hardened their earthenware in open fires or in kilns, and, notwithstanding the favorable statements of some authors, it was much inferior in compactness to the common ware manufactured in Europe or America.

These remarks, it should be understood, apply to the pottery made by the Indians who inhabited the eastern half of the United States. A superior kind

---

[4] Hunter: Manners and Customs of several Indian Tribes located west of the Mississippi, Philadelphia, 1823, p. 296.

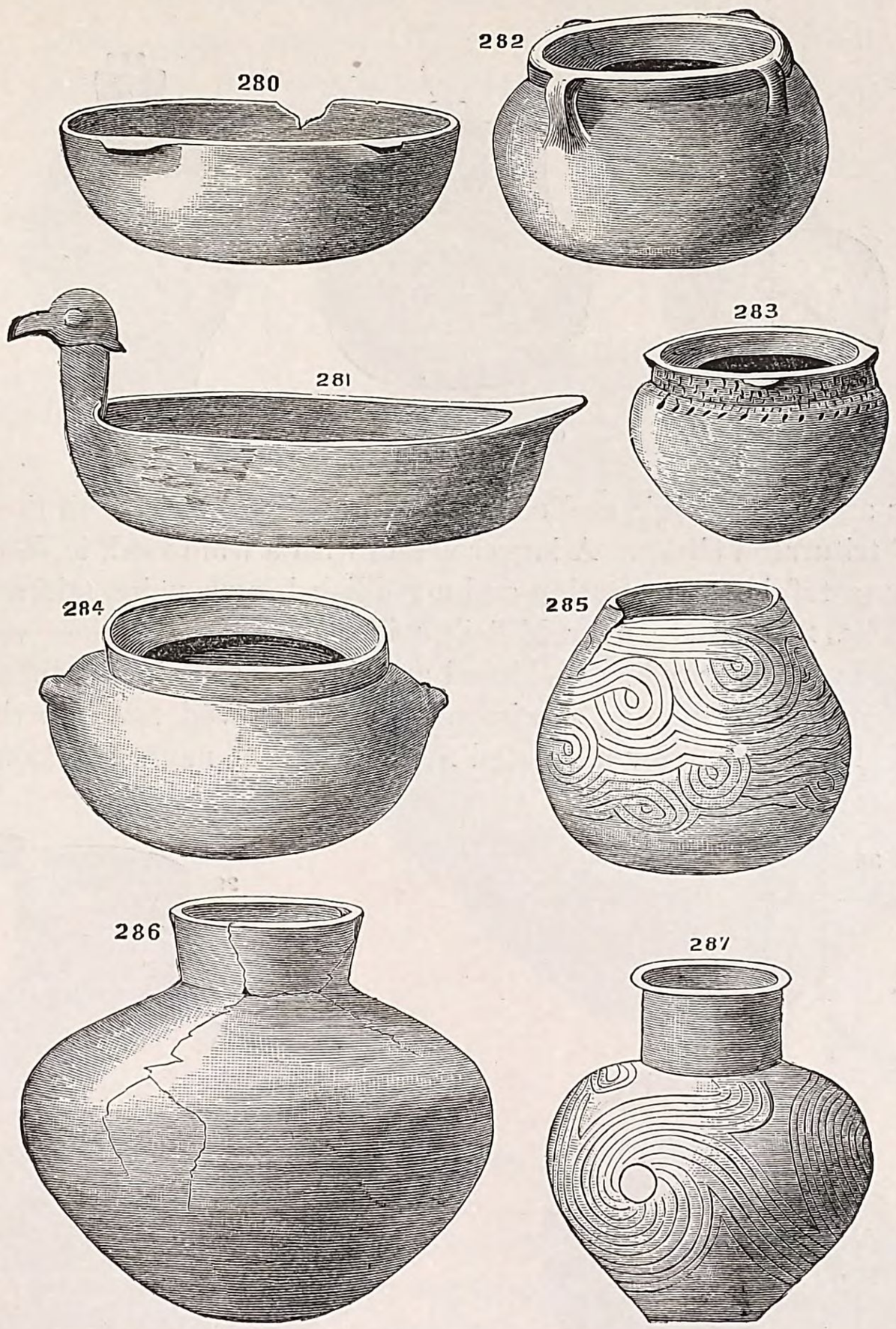
of pottery was manufactured in the more western regions of the continent, as shown by numerous fragments of ancient earthenware which occur, for instance, on the Little Colorado and Gila, especially among ruins, and are often highly decorated and painted with various colors, exhibiting a style of workmanship differing from, and surpassing that, which prevailed on the eastern side of the Rocky Mountains. The superiority of *Mexican* pottery compared with that of the more northern tribes is too well known to be particularly dwelled upon.

The simplest clay vessels left by the eastern aborigines are bowls of a more or less semi-globular shape, cut off abruptly at the rim and destitute of decoration or any kind of handles. Such specimens vary much in size, and are often of rude workmanship. The more elaborate articles of this class, however, show two or more projections immediately below the rim. Of this class is a vessel with four small horizontal projections, probably put on for the sake of convenience as well as for ornament. In this specimen the clay is mixed with particles of coarsely pulverized shells (Fig. 280, mound in Tennessee). This vessel is not of very good workmanship. Much better is a round bowl of larger size, provided on one side with a handle in the shape of the head and neck of a bird (perhaps intended for a duck), and balanced, as it were, on the other by a plain handle rising obliquely from the rim. With some imagination the bird's tail might be recognized in the second handle (Fig. 281, mound in Illinois). In this specimen the clay is slightly mixed with pulverized shells, and the outside was originally painted brown. Similar bird-shaped bowls have been figured and described; also such in which a human head takes the place of that of a bird. Bowls of a more elaborate shape contract more or less toward the aperture, where they terminate in a rising rim. Such bowls are often furnished with projections or ears for facilitating handling. A specimen of this kind (Fig. 282), which was taken from a mound in Union County, Kentucky, is set with four ears around the circumference. Another bowl, formed of clay strongly mixed with pounded shells, shows four equidistant small projections in the plane of the aperture. The shoulder portion is ornamented with crescent-shaped impressions (Fig. 283, mound in Tennessee). A third specimen of the class under consideration is furnished with two mutilated studs projecting below the shoulder (Fig. 284, Arkansas). It is shaped with tolerable regularity and much better burned than any of those thus far described. This vessel seems to have been originally coated with black paint. Small particles of shells are visible in the clay.

A peculiar, though by no means uncommon type is shown in a fine specimen very broad near the bottom and contracting, without forming a shoulder, toward the comparatively narrow aperture. This vessel (Fig. 285, mound in North Carolina) is flat-bottomed and ornamented on the outside with deeply incised curved lines, distributed in regular patterns. There are small particles of mica and of other stone perceivable in the mass of the clay.

Vessels in which the portion projecting above the shoulder becomes narrow

and forms a kind of neck approach the bottle shape. Of this character is a well-made and elegantly formed specimen from a mound in Tennessee (Fig. 286). The original paint, a bright red, has not been totally effaced by time. A somewhat smaller, but very gracefully shaped vessel of this kind, which is



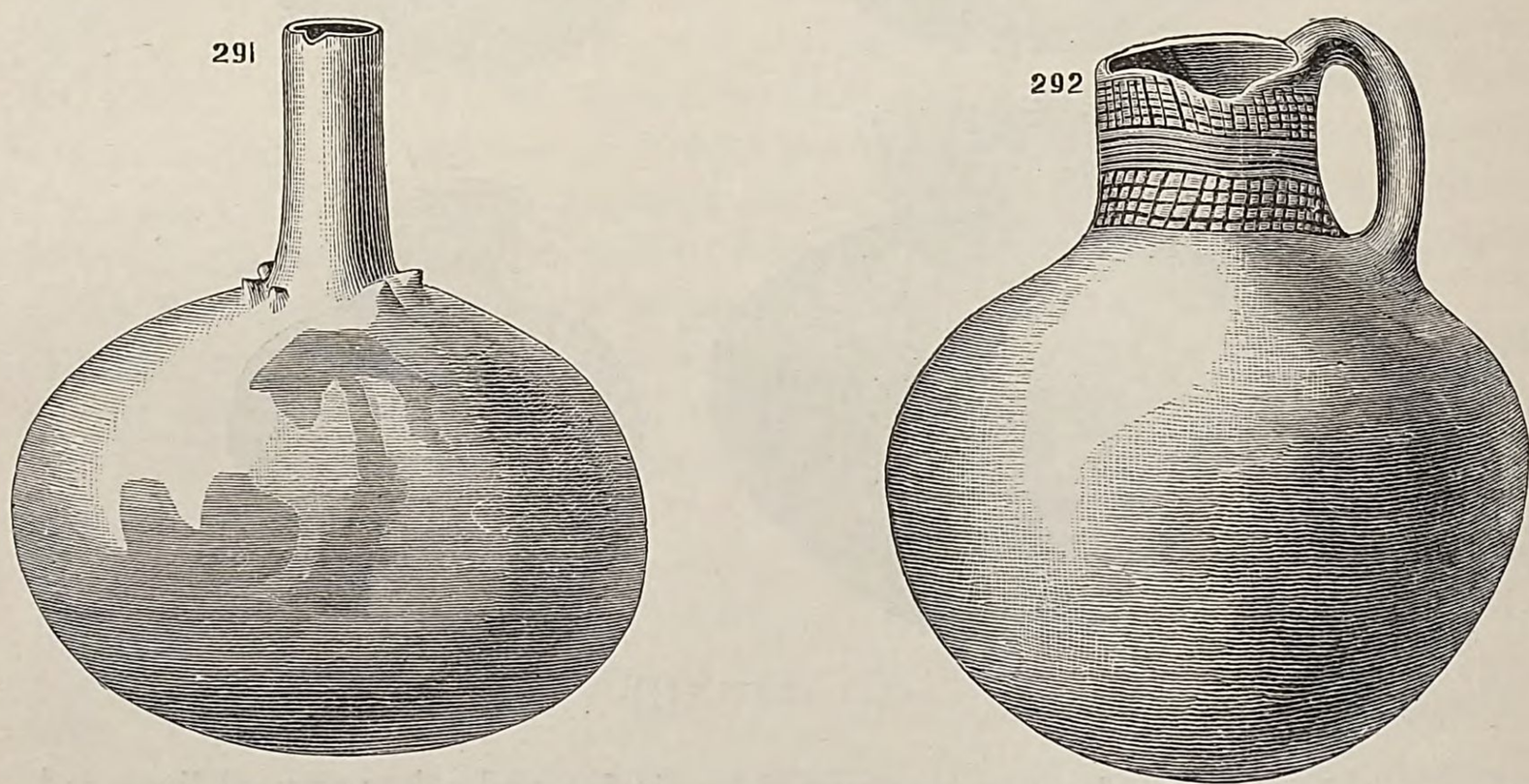
CLAY VESSELS ($\frac{1}{4}$).

ornamented with regular figures formed by circles and other curved lines radiating from them, was discovered in a Louisiana mound (Fig. 287). This vessel narrows toward the flat bottom, and its cylindrical neck is provided with a prominent lip. It appears to consist of pure or nearly pure clay, is of a light-brown color passing into black in some places, and has hardly suffered

from the effects of time. Vessels of this description, though resembling each other in general contour, present a great variety of shapes, but they are in most cases less carefully moulded than the two specimens just described. Some are small, measuring only a few inches in height. A specimen from a mound in Tennessee (Fig. 288), by no means the smallest in the collection, is

CLAY VESSELS ($\frac{1}{4}$).

four inches and a half high, and consists of unpainted clay, with the usual admixture of triturated shells. A larger vessel with a wide neck is distinguished by a rather tasteful ornamentation and a reddish brown paint still adhering to the clay (Fig. 289, grave near Milledgeville, Georgia). These vessels with high and wide necks may be considered as typical. Of a quite different shape is a flat-bottomed ornamented specimen inwardly curved towards the bottom, and provided with a narrow mutilated neck (Fig 290, mound in Louisiana).



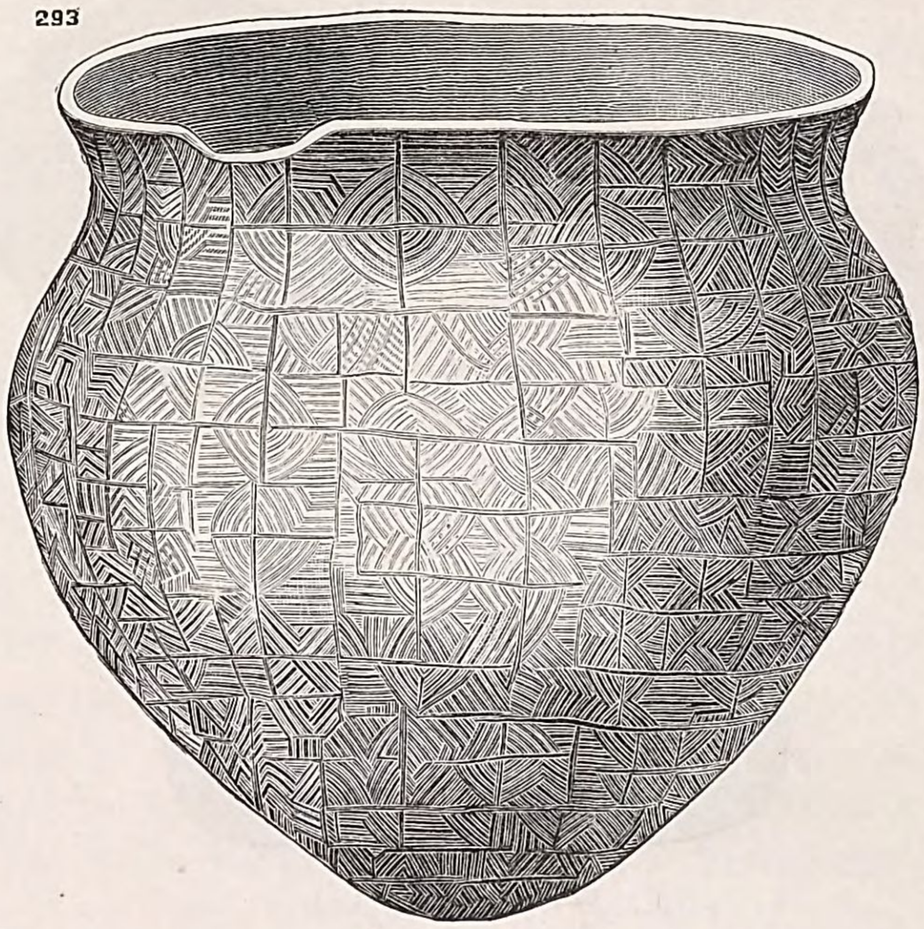
CLAY VESSELS ($\frac{1}{4}$).

The collection contains a number of large vessels which, on account of their long and narrow necks, present the true bottle shape. A well-preserved specimen of this kind (Fig. 291) was obtained from a Tennessee mound. The

neck slightly expands at the aperture, and where it joins the body of the vessel it is surrounded by eight ornamental studs set in pairs. This vessel was never painted, and therefore shows the natural gray color of the clay, in which numerous diminutive fragments of shell can be seen. One of the finest pieces of pottery in the collection (Fig. 292) is a bottle-shaped jar furnished with a stout and convenient handle. The mutilated neck only shows a somewhat rude linear ornamentation. This specimen, which consists of a gray unpainted clay, mixed with small particles of a black mineral substance, was taken from a mound near Provo, Utah Territory.

There are in the collection some very large vessels which undoubtedly were designed for cooking purposes. One of them (Fig. 293) is more than fourteen inches high, and measures nearly thirteen inches across the aperture. The portion below the rim shows a depression which rendered suspension practicable. This method had to be resorted to, because the kettle could not stand on its lower part which presents an almost conical shape. The outer surface of the vessel shows impressions of tolerably regular pattern and apparently not traced by hand, a circumstance rendering it probable that the vessel was modeled in a woven basket. This remarkable specimen was ploughed up not far from Milledgeville, Georgia. Large clay vessels of a more elongated form, though less conical at the bottom, undoubtedly were employed as funeral vases among certain tribes of the South, for several such vessels containing human bones have been taken from southern mounds. A specimen of this description is preserved in the National Museum. This vase, which was badly injured during its exhumation, resembles in general outline and size the specimen just described. The depression below the rim is somewhat shallower, the lower portion more rounded, and the outside shows impressions of a rather indistinct character. The vessel was discovered in a low mound on the Oconee River, nine miles below Milledgeville, Georgia. When found, it was covered with a well-fitting arched lid, and contained unburned human bones, which soon crumbled to dust upon exposure to the air (Nr. 12305 of the collection).

293

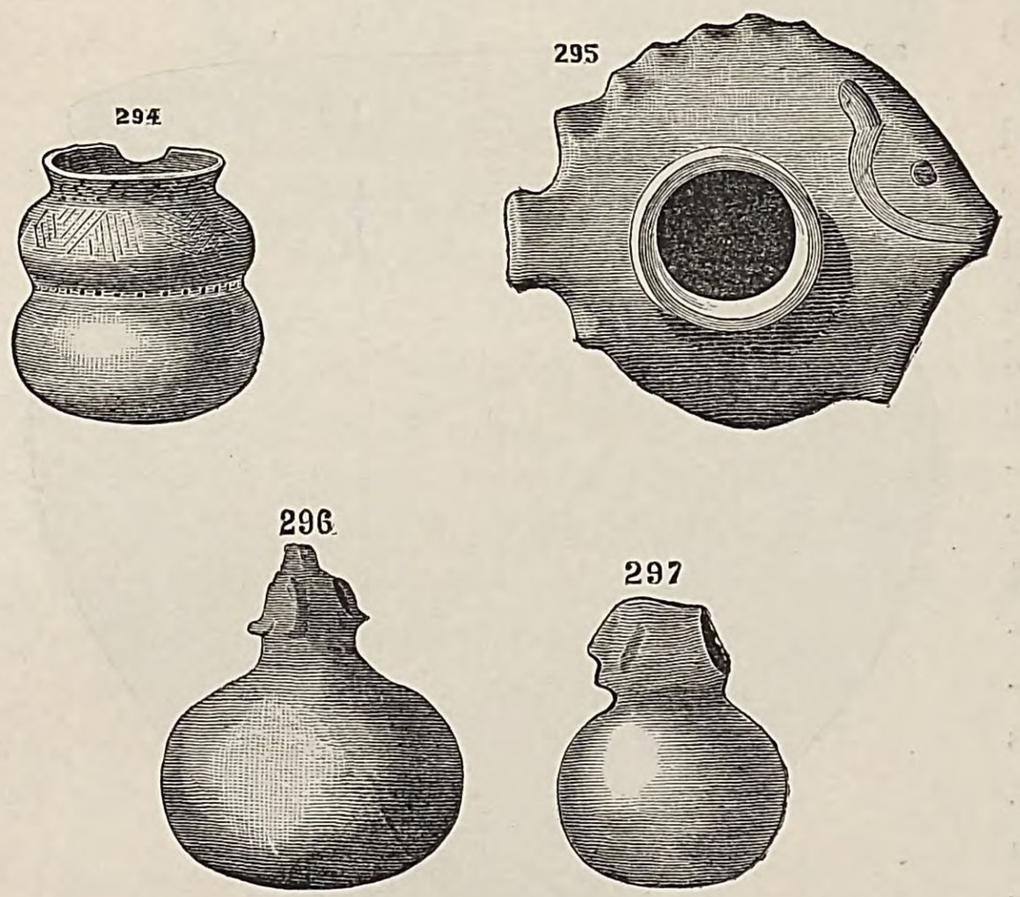


CLAY VESSEL ($\frac{1}{4}$).

The largest vessels made by the Indians, it seems, were those used in pro-

curing salt by evaporation near salt springs. In such localities there have been found thick fragments of rude earthenware, bespeaking vessels as large as a barrel. This kind of pottery is usually mixed with coarsely pounded shells. The collection contains such fragments derived from Tennessee and other States, but no entire or nearly entire vessel, and the writer is not aware that a perfect specimen is preserved in any collection of the United States.[5]

Among the large number of smaller vessels in the Museum we take notice of one which is remarkable for a depression encircling its middle, giving the object almost the appearance of two bowls, one placed upon the other (Fig. 294, mound in Louisiana). This specimen, which is flat-bottomed and rudely ornamented with lines and dots, represents a type, though not one that is very frequently met. Similar vessels are still made by the Zuñi Indians.[6] A very curious vessel, obtained from a mound in Tennessee, is made in imitation of a fish, in which ichthyologists have recognized the sun-fish (*Pomotis*), an inhabitant of the Mississippi River. The neck, about an inch in height, rises from the right side of the fish (Fig. 295, upper view). A smaller and less elaborate specimen of the same shape, taken from a mound in Louisiana, is preserved in the Museum. Such forms might be looked for in collections of ancient Peruvian pottery.



CLAY VESSELS ($\frac{1}{4}$).

Lastly, mention must be made of a class of vessels which bear some resemblance to bottles, in which the upper part or neck forms the imitation of a human head, or of that of an animal, the aperture being usually placed at the back part of the head. In a vessel of this description, taken from a mound in Tennessee, the upper part bears a slight resemblance to the head of some animal (Fig. 296). Another specimen of this character

[5] Since the above was written, there has been temporarily deposited in the Museum by the administration of the Louisville Public Library, a vessel of this description, found in a fragmentary state, but restored so as to show its original form. The specimen in question has the shape of a pan with slightly flaring sides and thickened rim. It measures twenty-six inches in diameter at the rim, and is eight inches deep. The thickness of the bottom and sides does not exceed half an inch. The outside of this vessel shows the impressions of the basket in which it was formed, while the inside is perfectly smooth. The clay is of a grayish color, and mixed with pounded shells.

[6] The natives of British Guiana manufacture pottery of the same form, as shown by several specimens in the collection. The double gourd, it appears, served as the model.

exhibits a human head, with the nose, chin, and ears distinctly marked. The occipital portion forms the aperture (Fig. 297, mound in Union County, Kentucky). Vessels in the shape of rude human figures or of animals occur not unfrequently in the tumuli of the Mississippi Valley.

There are in the collection numerous fragments of pottery from all States and Territories of the Union, and from other parts of North America. Many are large enough to show the original shape of the vessel to which they belonged, while others serve to illustrate the different styles of ornamentation in vogue among the aboriginal potters. Of particular interest are the fragments of pottery obtained among the ruins of ancient settlements on the Little Colorado and Gila, and from other parts of the Western Territories. The specimens, for instance, collected during Lieutenant Whipple's survey of those districts are all in the collection, together with many other interesting objects obtained by his party.[7] The sherds in question betoken a much higher state of the potter's art than that ever attained by the aborigines of that part of the United States which lies east of the Rocky Mountains, and the tribes inhabiting now the localities where such fragments occur, produce no earthenware of equal quality. The fractures of such sherds usually exhibit a compact clay of a gray, yellowish, or light-red color, and they are coated, sometimes on both sides, with durable whitish-gray, yellow, or bright-red paint, forming a ground on which parallel lines, lozenges, and other (sometimes very complicated) patterns are executed in black or in other colors. In many instances the paint on these fragments appears as a thin layer which presents a glossy surface, and is almost as hard as the glaze on the clay vessels made by whites. A number of specimens, however, exhibit no paint, but ornamentation of another character, in the shape of raised or indented figures, which betoken, in many instances, considerable taste and knowledge of the art of decoration. "It may not occur to every one," says Thomas Ewbank in Lieutenant Whipple's report, "that most, if not all, the elements of decorative art, as regards curved and straight lines, which are supposed to have originally occurred to the Egyptians, Assyrians, Greeks, and other advanced nations of the eastern hemisphere, have been exhibited by the ancient occupants of the western one. In the relic just noticed,[8] we have the line rolled spirally inward and outward—the involute and evolute. In other samples of pottery the *guilloche*, or curved fillet, in various forms, is met with; also, waving lines, arched, invected, engrailed, radiant, embattled; the trefoil, cross, scroll, and numerous other initial forms, though less expanded and diversified than in the Old World." Generally speaking, broken pottery answering more or less the description here given, has been found in the Territories of Arizona, New Mexico, Utah and Colorado.

---

[7] Described and figured in Vol. III of the "Reports of Explorations and Surveys to ascertain the most practicable and economical Route for a Railroad from the Mississippi River to the Pacific Ocean." Washington, 1856.

[8] Fig. 12 on page 49 of Whipple's report.

It would be impossible to mention here the numerous specimens of pottery derived from Mexico, where, as every one knows, the aboriginal ceramic art had attained a far higher degree of perfection than in the districts lying northward of the Aztec empire. Attention must be drawn, however, to two large vases of exquisite workmanship, which were brought to the United States by General Alfred Gibbs, after the termination of the Mexican war, and presented, with many other valuable Mexican relics, to the National Museum by his mother, the late Mrs. Gibbs, of New York. One of them (Fig. 298), a most elaborate specimen of pottery, is a round vase standing on four curved feet, and narrowing toward the aperture, which is formed by a short neck terminating in a horizontally projecting rim, ornamented with incised ring-shaped patterns. The vase, which measures thirteen inches and

298

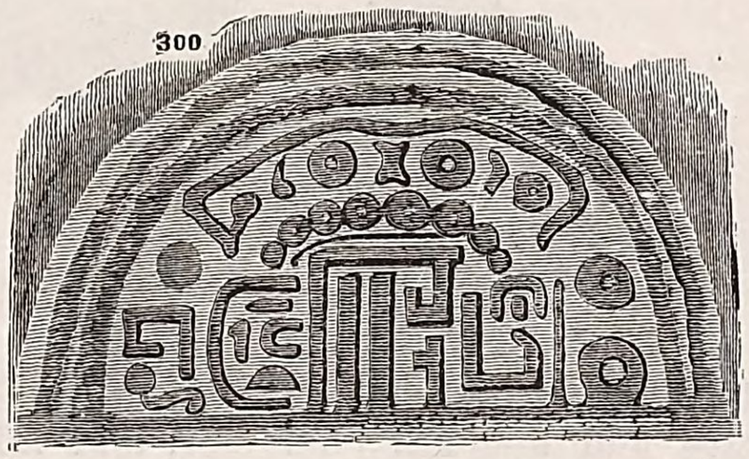
299

MEXICAN VASES ($\frac{1}{4}$).

a half in height, is surrounded by ten figures in relief, representing females, five of which grasp a child with the left arm. These five figures, which alternate with the others not holding children, are distinguished from them by a more conspicuous head-dress. Above these ten figures are to be seen, in a row, nine human heads, or masks, and between them, at nearly equal distances from each other, three lizard-like designs, constituting twelve figures in all. The feet divide the lower portion in four compartments, each of which exhibits a figure of a man flanked by two human heads, and each foot is surmounted by an animal, probably representing the coyote, of which only the head, chest, and fore-paws are visible.

The other vase (Fig. 299), matching the one just described, is a still more admirable specimen of Mexican pottery, and, as far as the general outline

is concerned, might readily be taken for a vessel of Etruscan or Greek origin. The peculiar ornamentation, however, stamps it at once as a Mexican product of art. The vessel may be compared to a pitcher with two handles standing opposite each other, and with two mouths projecting between them. The handles divide the vase into two halves ornamented nearly alike. Each handle is formed by two snakes, crossing their tails and resting their heads on the rim, and the flat base of the vessel is moulded in the shape of a coiled serpent. A large human head with a prominent chin and protruding tongue, wearing a curious crescent-shaped head-dress with long lateral appendages, constitutes the central figure of each side of the vase. To the right and left of this large head are lizard-like designs, and next to them near the handles, figures of women. On each side of the head-dress surmounting the large head appear three figures, one lizard-shaped, the other in the form of a human head, and the third in that of a crescent-shaped tablet bearing, it has been thought, hieroglyphic signs. The four tablets, it should be stated, exhibit the same characters (Fig. 300, natural size). The lizard-like figure also appears below the termination of each mouth. Beneath each handle the vase bears the moulding of a male figure, and the outer curve of the handles shows, between the bodies of the snakes, the relief design of a fish. The lizard-like figure is seen again on each side of the rim between the serpents' heads. The circumference of the vase exhibits, immediately above the coiled snake forming its base, ten human heads wearing elaborate head-dresses (like all imitations of the human head on this vase), and an eleventh figure of indistinct character, perhaps intended for a hieroglyphical tablet. This remarkable vase is fourteen inches and a quarter in height, and coated with black paint, like the specimen previously described.



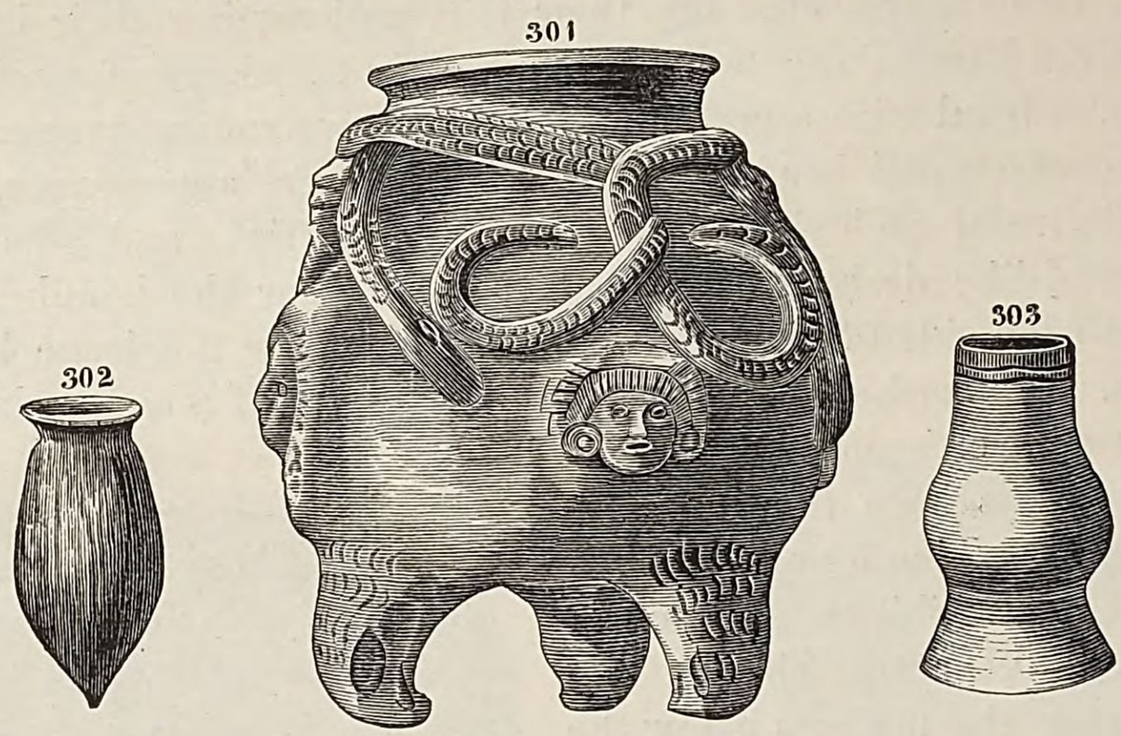
TABLET ($\frac{1}{1}$).

Another beautiful Mexican vase of somewhat globular shape (Fig. 301) is remarkable for its elaborate raised ornamentation, which consists of four entwined snakes and four masks placed at equal distances from each other. The vessel stands on three feet presenting beautifully executed eagles' heads. The color of the vase is a light reddish-brown.

There are in the collection many small Mexican vessels, a full description of which would exceed the limits of this account. We only notice among them a small vessel tapering to a point at the lower extremity, reminding one of similar productions of ancient Roman art (Fig. 302, Tezcuco), and to a well-shaped goblet of red ware, derived from Sacrificios Island, nearly opposite Vera Cruz (Fig. 303).

Having treated of North American clay vessels, we have to notice the fab-

rics of clay not intended for culinary and other domestic uses. The North American Indians frequently made their pipes of clay, moulding them into various forms, sometimes with great ingenuity, as previously stated. They also manufactured clay images, which have been noticed in different publica-



MEXICAN VESSELS ($\frac{1}{4}$).

tions. Generally speaking, such imitations of the human form are of a primitive and uncouth character, and inferior to corresponding manufactures of stone. Much better than the ordinary aboriginal clay fabrics of this kind is a head which, to judge from the remaining part below the neck, may have originally formed the handle of a vessel. In this head the features are clearly, though not correctly, defined (Fig. 304). The head is hollow and pierced

TERRA-COTTA FIGURES ($\frac{1}{2}$).

at the occiput with a hole, which evidently has been enlarged after the discovery of the relic. This specimen was found among shell-heaps near Mobile, Alabama. The same locality has furnished a rude aboriginal clay manufacture

in the shape of a wolf's head, to all appearance likewise the handle of a vessel (Fig. 305). In this instance the specimen is solid, consisting of clay with the usual admixture of shells.

The ancient Mexicans, on the other hand, have left numberless clay figures representing the human form, which are, however, generally more conspicuous for elaborate details than for correctness of the proportions, the heads being often unnaturally large. The significance of many of these figures is not known, though it may be assumed that a large proportion of them relates to the mythology of the Aztecs. Some may represent household gods, or penates, while others, perhaps, were nothing else but toys. Most of these manufactures are hollow and pierced with a few holes for emitting the heated air produced by the baking. Without this precaution the objects would have burst, owing to the expansive force of the air.

One of the most elaborate Mexican figures of the collection (Fig. 306) represents a man seated, with the hands resting on the knees, and bearing on his back another human figure so placed that its head surmounts that of the first, while its hands press against the forehead and its feet rest on the shoulders of the lower figure. The upper figure wears a rather low head-dress, and the lower one is profusely decorated with armlets, wrist-bands and leg-ornaments. The most conspicuous attributes of this curious pair consist in two serpents which, descending from the head-dress of the upper figure, encompass, as it were, the group on both sides, and rest their heads between the feet of the lower figure. In this specimen the clay is well burned and shows externally a light-brown paint.

A Mexican image of simpler design (Fig. 307), likewise represents a man in the attitude so often exhibited in Mexican and Central American terra-cottas and sculptures, namely, seated and placing the hands on the knees. The figure is highly ornamented and wears a head-dress of a shape reminding one of a terraced pyramid. The color is a pale red.

Two remarkable figures of the collection, nearly identical in shape, though somewhat differing in size, were presented to the National Museum by the family of the late George Gibbs. They are of a more uncouth appearance than the two specimens before described, and represent squatting women pressing their hands against the ears (Fig. 308). The faces indicate aged individuals with prominent noses and somewhat protruding tongues. The sexual parts are broadly marked. The peculiar head-dresses show, in both instances, on the right side a projection resembling a tuft of feathers. Both figures are coated with a shining black color. It would be interesting to know the circumstances which gave rise to the manufacture of these two almost identical images. Quite different in design is a small statuette of a woman dressed in an ornamented gown reaching to the feet, and wearing a high cap (Fig. 309). The hollow figure encloses a loose clay ball, giving the object the character of a rattle. Rattles of clay, it is well known, belong to the common relics of the ancient Mexicans.

The peculiar attention paid to snakes by the inhabitants of Anahuac is exemplified in the collection by a number of mouldings in clay representing

306

307

308

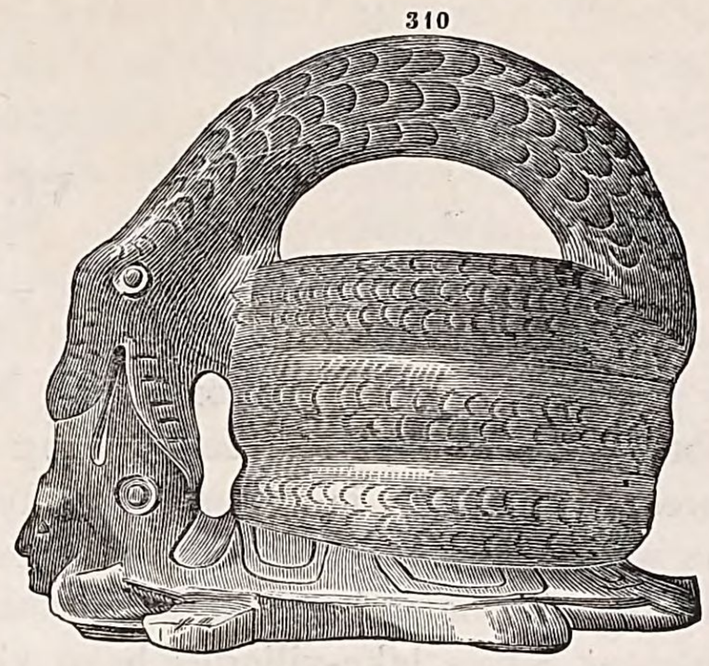
309

MEXICAN STATUETTES.

those reptiles in various attitudes. Several of these specimens show a snake coiled on the back of a turtle and in the act of biting its head. In some of

these representations the lower part of the turtle's neck exhibits a human face (Fig. 310). This curious group is quite typical, and probably refers to some tradition or to a religious conception of the Aztecs. A coiled snake with uplifted head is likewise frequently met among Mexican terra-cottas, and a number of productions of this character can be seen in the National Museum. One of them (Fig. 311) is the well-executed figure of a rattle-snake with four rattles. Such specimens are usually solid, exhibiting externally a shining black or other dark color.

310



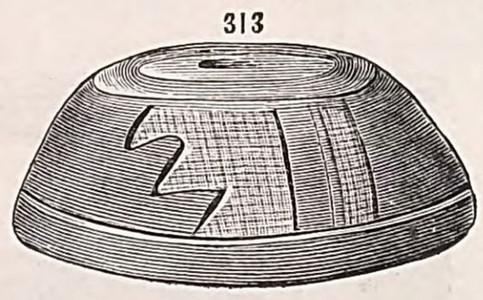
311

COILED SNAKES IN TERRA-COTTA ($\frac{1}{4}$).

Clay was employed by the Mexicans in the manufacture of small mask-shaped heads and of various other objects, either of a useful or ornamental character. Their whistles and rattles exhibit an endless variety of forms, being made in imitation of the human figure, or in the shape of animals, or representing monstrous creations of fancy which it would be difficult to define. Sometimes the feet of Mexican vessels were made hollow for receiving clay balls, insomuch that such objects partook of the combined characters of utensils and of toys. The Mexican clay spindle-whorls (malacatl), of a nearly semi-globular shape, are often tastefully ornamented, as shown by several specimens among the Mexican relics in the Museum (Figs. 312 and 313, Tezcuco).

312

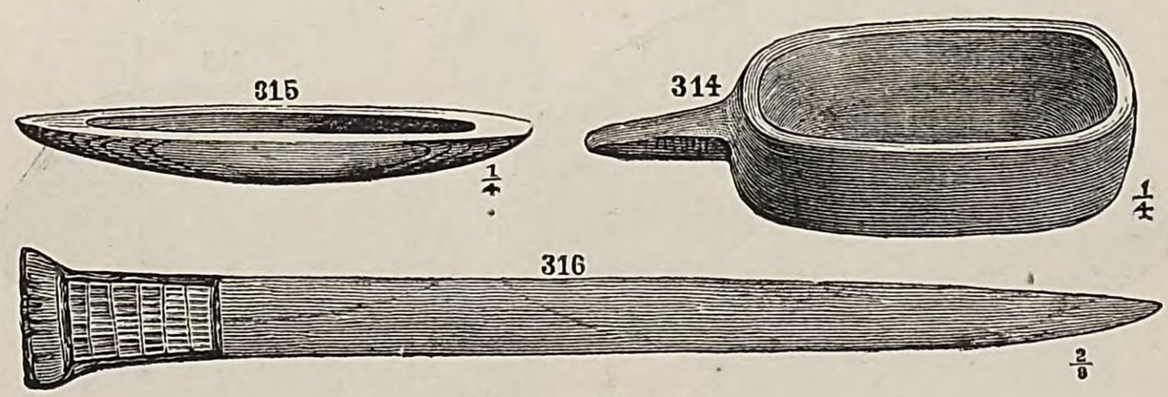
313



MEXICAN SPINDLE-WHORLS ($\frac{1}{1}$).

VI. WOOD.

Among the materials composing North American aboriginal relics we assign the last place to wood, considering that the occurrence of wooden manufactures of early date is extremely limited. A substance so much subject to decay as wood cannot be expected to resist physical influences for a considerable length of time, unless peculiar circumstances retard its destruction. Thus the ancient Swiss lake-villages have yielded an abundance of wooden articles, owing to the preservative qualities of the peat enclosing them, which had accumulated along the lake-shores. The National Museum contains but a small number of wooden objects which can be included in the archæological series, and these were almost exclusively obtained from graves of the Californian Santa Barbara Islands.[1] The articles apparently consist of cedar wood, which has become very light, almost as light as the wood of the utensils extracted from the sites of lacustrine settlements in Switzerland. Among these Californian relics are rotten wooden handles, some, indeed, still holding arrow-head-shaped knife-blades of flint, cemented into the wood by means of asphaltum. They resemble the Pai-Ute knives mentioned in the beginning of this account (page 2). There is further to be noticed a wooden bailing-vessel with a short handle, fitting in a rectangular hole cut into the vessel (Fig. 314, Santa Cruz Island). A number of well-made toy canoes, the smallest of which measures seven inches in length, bears witness to the maritime propen-



OBJECTS OF WOOD.

sities of those islanders (Fig. 315, Santa Cruz Island). These specimens are very interesting, as they undoubtedly represent the shape of the "dug-outs" used by the Southern Californians. It is known, however, that they also em-

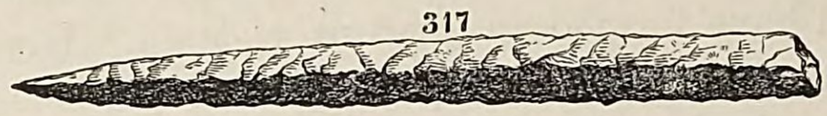
[1] The writer is at this moment unable to state whether these relics were found associated with manufactures of Caucasian origin or not.

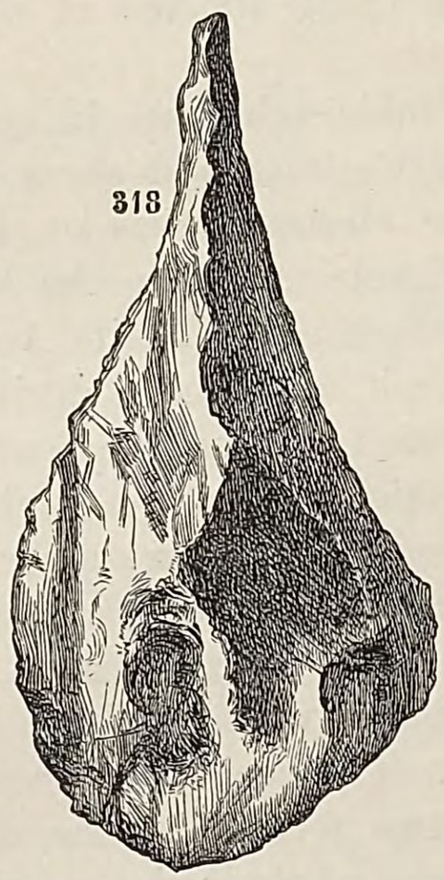
ployed boats constructed of planks. Perhaps the most curious wooden object from California is an implement resembling a short sword, terminating opposite the point in a broad flat handle, inlaid with a kind of mosaic of *Haliotis*-shell (Fig. 316, Santa Cruz Island). It is stated that "sabres of hard wood with edges that cut like steel" were among the weapons of the California Indians (H. H. Bancroft); but the object in question is neither sharp-edged, nor, as it appears, made of very hard wood, and, being, moreover, thin and light, hardly could have formed an efficient weapon. Hence there is a probability that it represents either a weapon of parade, or some kind of implement designed for peaceable purposes. From the same localities were derived parts of planks and other fragmentary articles of wood, the use of which cannot now be determined.

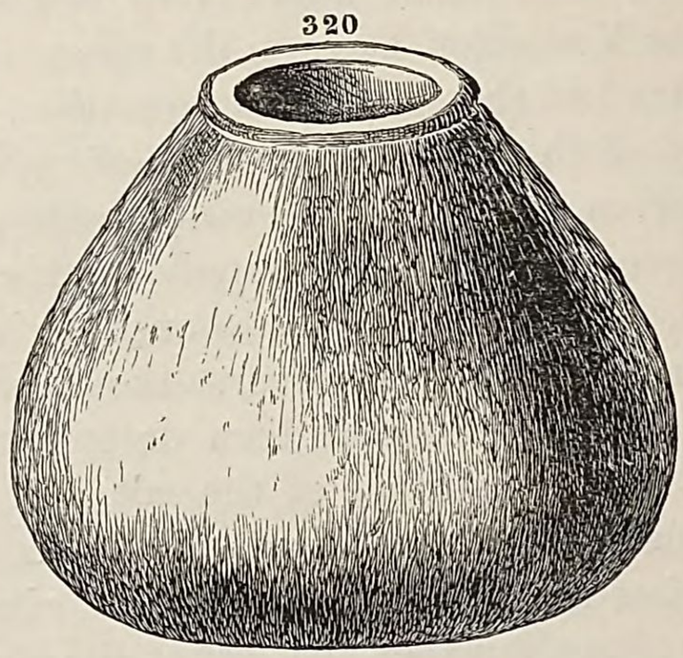
By far the most remarkable relic of vegetable substance in the collection is a piece of matting of split cane, fifteen inches long and about nine inches wide, which was found under very peculiar circumstances on Petite Anse Island, near Vermilion Bay, on the coast of Louisiana. A notice by Professor Henry, affixed to the specimen in question, runs thus: "Petite Anse Island is the locality of the remarkable mine of rock salt, discovered during the civil war, and from which, for a considerable period of time, the Southern States derived a great part of their supply of this article. The salt is almost chemically pure, and apparently inexhaustible in quantity, occurring in every part of the island (which is almost five thousand acres in extent) at a depth below the surface of the soil of fifteen or twenty feet. The fragment of matting was found near the surface of the salt, and about two feet above it were remains of tusks and bones of a fossil elephant. The peculiar interest in regard to the specimen is in its occurrence *in situ* two feet below the elephant remains, and about fourteen feet below the surface of the soil, thus showing the existence of man on the island prior to the deposit in the soil of the fossil elephant. The material consists of the outer bark of the common southern cane (*Arundinaria macrosperma*), and has been preserved for so long a period both by its silicious character and the strongly saline condition of the soil." This specimen, so interesting on account of its associations, was presented to the National Museum by Mr. J. F. Cleu.

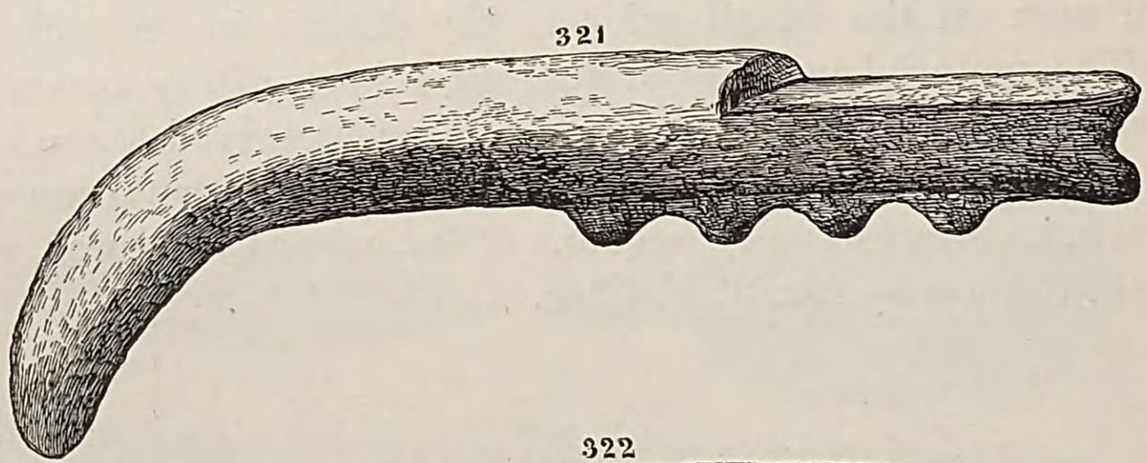
SUPPLEMENT.

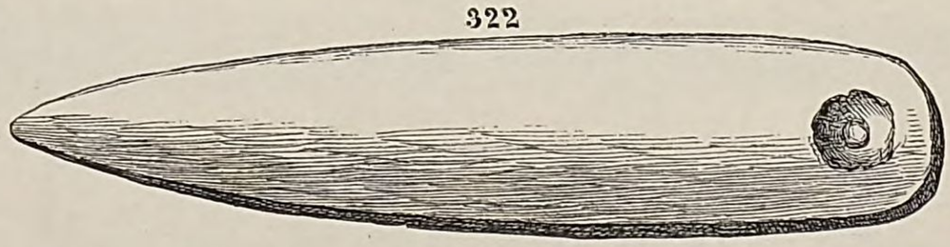
Since the preceding pages were written, the National Museum has been enriched with a large number of aboriginal relics, some of them belonging to











STONE IMPLEMENTS ($\frac{1}{2}$).

types never before described. It would be impossible to notice at present the extensive additions to the collection, but a few typical objects which appeared of particular interest to the writer may here be mentioned.

Fig. 317.—A well-wrought three-sided perforator of brown flint, obtained with other tools of the same description from Santa Cruz Island, California.

Fig. 318.—Another piercing tool of large size and consisting of light-gray flint. It terminates in a three-sided point which is rounded by wear. The portion opposite the point is broad and massive. In other specimens of this class, all of which were found by Mr. Paul Schumacher on Santa Cruz Island, the thick part is coated with asphaltum, doubtless for more convenient handling.

Fig. 319.—A chipped sickle-shaped implement of light-gray hornstone, probably used in scraping round objects of wood, bone, etc., the inner curve forming a strong, carefully wrought edge. The specimen, which was found in Ohio, terminates in an indented tang or stem, by which it appears to have been attached to a handle.

Fig. 320.—A remarkable specimen of the perforated club-head-shaped articles previously described. It consists of greenstone, and was found in California, like the other objects of analogous form before noticed.

Fig. 321.—A very singular tool made of dark basaltic rock. The working part is curved, and the upper side shows a shoulder on which the end of a handle may have rested. The four conical elevations seen on the lower side appear to have served for confining the ligatures by which the handle was connected with the implement. This specimen was obtained in Oregon.

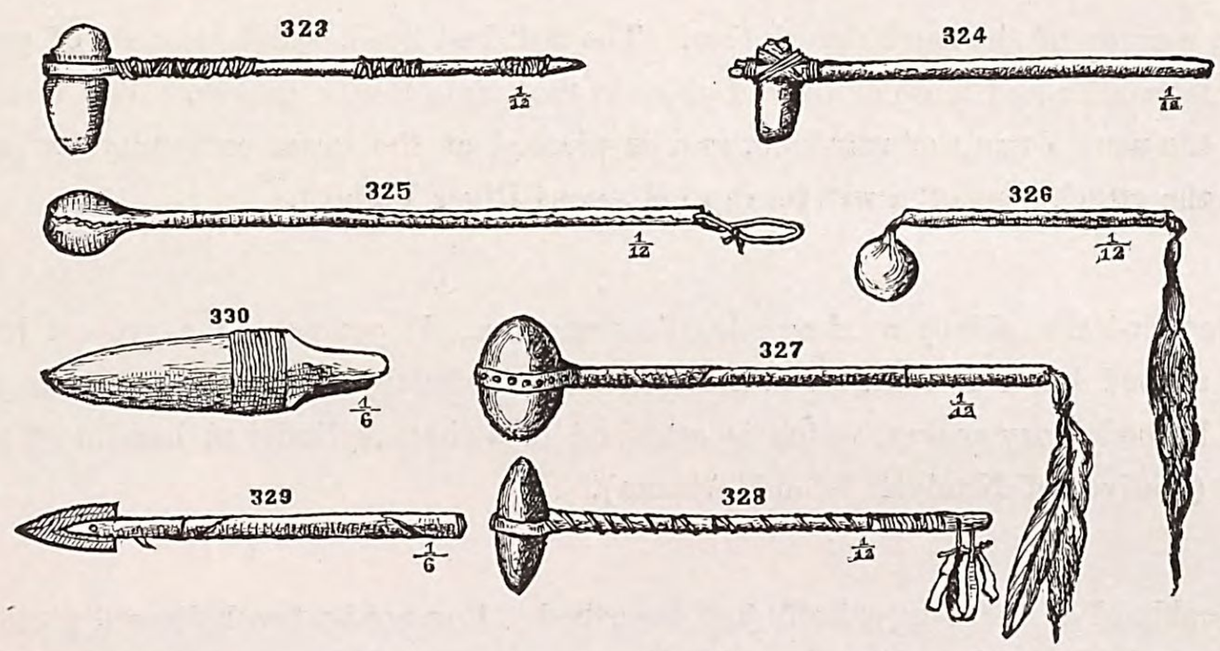
Fig. 322.—One of several objects made of argillite and obtained from Massachusetts. They are flattish and about one-third of an inch thick at the perforated rounded end, but become gradually thinner toward the tapering opposite extremity. It may be assumed that they served as implements, though their special use thus far has not been ascertained. In some the perforation is wanting, which hardly would be the case if these objects had been designed for other than useful purposes.

Among the objects lately obtained from Utah is a large stone of somewhat compressed roundish form, and showing no other modification but a groove running across the broader sides. The material of this stone, which weighs fifteen pounds, is vesicular basalt. The writer has seen in the State of New York, and elsewhere, similar stones or boulders grooved in the same manner. They are thought to have served instead of anchors.

APPENDIX I.

The Aboriginal Modes of hafting Stone and Bone Implements.

Various North American tribes still use, though to a limited extent, weapons and tools of stone and bone, hafting them according to the methods in vogue among their forefathers. Such modern specimens illustrate the manner in which the stone axes, celts, adzes, and other implements of earlier date were rendered serviceable by the addition of handles, and it has been thought proper, therefore, to figure and describe here the most characteristic among the numerous hafted weapons and tools preserved in the ethnological department of the National Museum.



HAFTED STONE WEAPONS.

Fig. 323.—Grooved greenstone axe with a hickory withe bent around the groove. The ends of the withe, which form the handle, are firmly bound with strips of raw-hide below the stone head, near the middle, and at the lower part (Dakota Indians).

Fig. 324.—Polished celt of argillite, chipped thin at the blunt part to fit into the cleft end of an oaken stick, where it is secured by twisted cords of sinew (Indians of the Missouri Valley).

Fig. 325.—War-club, consisting of a heavy roundish stone firmly connected with a long handle. Both the stone and the handle are tightly cased in raw-hide sewed together with sinew. The end of the handle is perforated for receiving a loop of dressed skin, designed to pass around the wrist (Dakota Indians).

Fig. 326.—A weapon of similar character. In this instance, however, the handle is much shorter, and the round stone head is not firmly attached to its end, but is merely connected with it by flexible thongs. The raw-hide covering of the weapon (including head and handle) consists of one piece taken from the caudal portion of an ox, a part of whose tail forms an ornamental appendage to the handle (Apaches). The analogy of such weapons to the mediæval "morning-stars" has been pointed out on page 32.

Fig. 327.—A war-club with a well-wrought and polished egg-shaped head of yellowish limestone, grooved around the middle for receiving the handle. One end of the latter is bent like a hoop to fit into the cavity of the stone, and strengthened by a casing of raw-hide, which extends about six inches below the head. The part of the ashen handle that encircles the stone is ornamented with large-headed brass nails. The extremity of the handle, again, is enveloped by a tightly fitting covering of raw-hide, taken from the caudal part of a buffalo. A tuft of the animal's tail has been retained for the sake of decoration, and a feather of the wild turkey is attached to the hair by means of a narrow strip of dressed skin (Blackfeet).

Fig. 328.—A weapon of the same description. The polished head, which consists of greenstone, is smaller and more elongated than in the original of Fig. 327. The handle shows the usual casing of raw-hide, and is pierced at the lower extremity for facilitating the attachment of a wrist-strap (Missouri River Valley).

Fig. 329.—Dagger-knife, chiefly used as a hunting weapon. It consists of a ground lance-head-shaped blade of dark slate, inserted and riveted by means of a wooden peg into a barbed ivory socket, which is attached to a short cylindrical handle of pine-wood (Natives of Nunivak Island, Alaska).

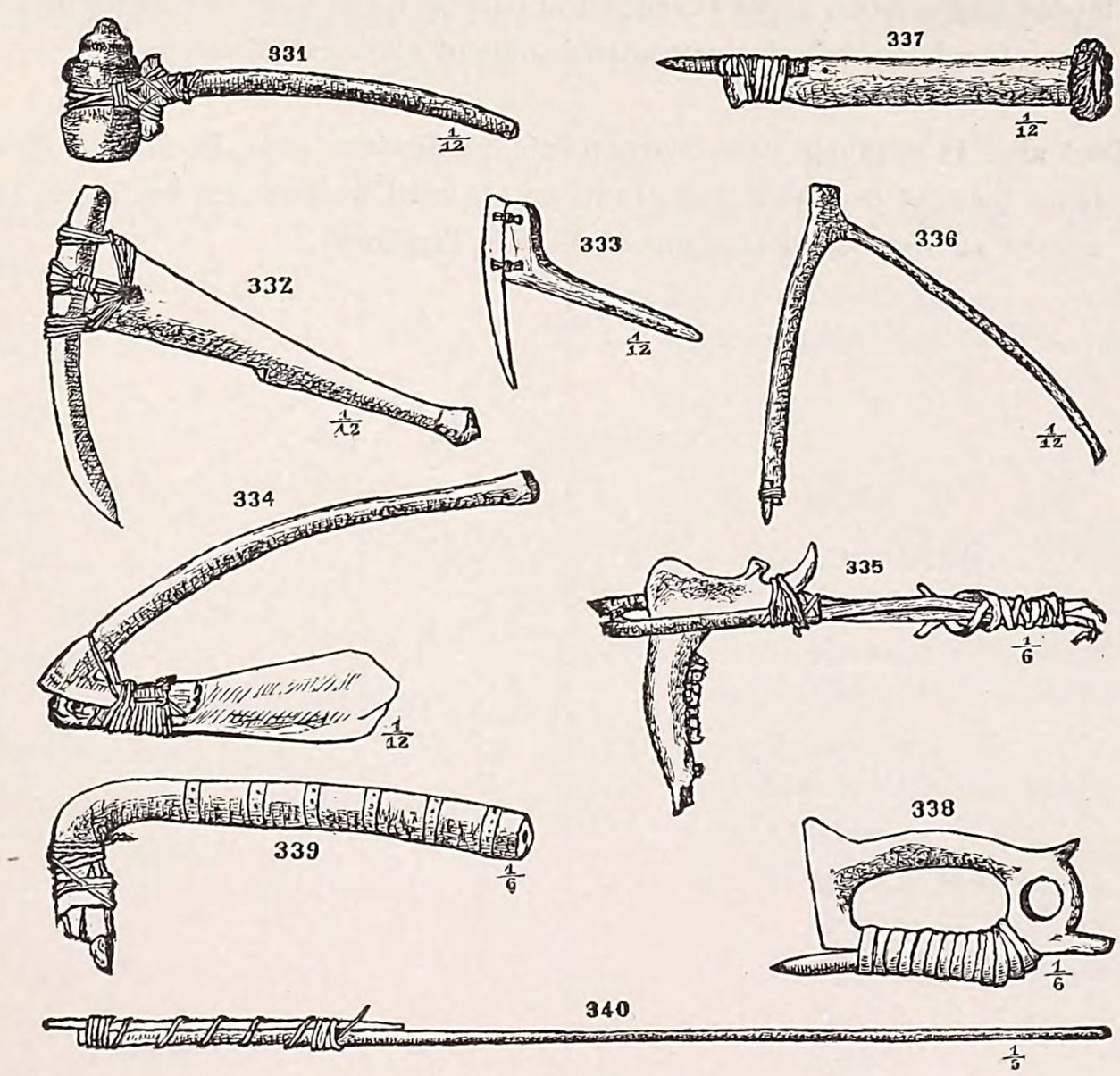
Fig. 330.—Scabbard of the dagger-knife just described. Formed by two hollowed pieces of pine, which are held together by a binding of split spruce-roots.

Fig. 331.—Grooved hammer of greenstone, the flattened lower side of which rests against a corresponding flat part of the curved handle. The head is connected with the handle by ligatures of raw-hide (Fort Simpson, British Columbia). There are similar hammers from the Northwest Coast in the collection, in which the narrower part of the stone is formed in imitation of an animal's head. Other hammers or mauls cased in raw-hide, one of which has been previously figured and described, are still in use among various tribes (See Fig. 79 on page 20).

Fig. 332.—Large adze-shaped pick of whalebone, attached by raw-hide thongs to a flattish massive pine handle, which is perforated at the broader part for receiving the ligatures. The latter are confined by notches in the sides of the head (Mackenzie's River District).

Fig. 333.—Smaller implement of the same character. The head of walrus ivory and the short pine handle show corresponding perforations, serving to connect both parts by means of raw-hide ligatures (Nunivak Island).

Fig. 334.—Hoe made of the shoulder-blade of a buffalo, and bound with raw-hide thongs to the shorter flat part of a hook-shaped curved handle of ash-wood. A pad of dressed skin is placed between the blade and the corresponding part of the handle (Arickarees, Fort Berthold, Dakota Territory).



HAFTED STONE AND BONE TOOLS.

Fig. 335.—Implement marked "reaping-hook." It consists of the right lower jaw of an antelope, around which is bent a sapling forming the handle. Its two ends are bound together by a strip of bark. The jaw is further secured to the handle by a thong of raw-hide (Caddoes, Indian Territory).

Fig. 336.—Small celt-shaped adze of argillite, resting against a shoulder at the extremity of a forked handle, the thinner branch of which, being held in the right hand, doubtless served to guide the implement, while the thicker part of the handle was grasped by the left. The stone blade is held in place by a cord of twisted sinew. The tool is said to have been employed in finishing the inside of canoes, thus combining the characters of an adze and a scraper (Natives of Vancouver's Island). Other methods of hafting adzes are exemplified by Figs. 70 and 71 on page 19.

Fig. 337.—Long flat celt-like chisel of argillite, attached to a roughly worked cylindrical handle by a thong of twisted raw-hide. The handle is provided with a shoulder against which the stone rests. The tool evidently was used in connection with a mallet, as indicated by the battered upper end, which is, moreover, confined by a ring of twisted spruce-roots (Vancouver's Island).

Fig. 338.—Celt-shaped chisel of argillite, strongly bound with a strip of leather to a carved handle of peculiar form (Vancouver's Island).

Fig. 339.—Chipped flint scraper, partly enveloped in buckskin, and bound by means of a raw-hide thong to a hook-shaped ornamented handle of elk-horn (Mandans).

Fig. 340.—Tool used in chipping stone arrow-points, perforators, etc. It consists of a slender blunt piece of deer-horn, bound with cotton cord to a wooden rod about the thickness of an arrow-shaft (Indians of Nevada Territory).

APPENDIX II.

*System adopted in arranging the Smithsonian Collection illustrative of North American Ethnology.**

I. Man.

Desiccated Bodies.
Skeletons.
Skulls.
Other Parts of Skeletons.

Casts of Indian Heads in plaster, wax, and papier-mâché.
Photographs, Drawings, and Paintings of Aborigines and of Scenes of Aboriginal Life.

II. Culture.

(1.) *Aliment, etc.*

A. Food.

1. Mineral Food.
   Salt.
   Clay (mixed with food).
2. Vegetable Food.
   a. Unprepared.
   Roots.
   Bark.
   Buds.
   Flowers.
   Fruits.
   Seeds.
   b. Prepared.
   Sugar.
   Preserved Fruits.
   Meal.
   Mush.
   Bread or Cake.
3. Animal Food.
   Dried and smoked Meat of Mammals, Birds and Reptiles.
   Dried and smoked Fish.
   Dried Fish-eggs.
   Roasted and dried Insects and Worms.

B. Drink.

1. Decoctions.
   Teas, etc.
2. Fermented Drinks.
   Cider, Wine and Liquor.

C. Narcotics.
Tobacco and its Substitutes.

D. Medicines.

1. Mineral Medicines.
   Earths, etc.
2. Vegetable Medicines.
   Herbs.
   Roots.
   Buds.
   Flowers.
   Seeds.
3. Animal Medicines.
   Pulverized Bones, etc.

(2.) *Habitations.*

A. Skin Lodges.

B. Models of Dwellings.
Shelters.
Skin Lodges.
Yourts.
Huts (of bark, grass, etc.).
Wooden Houses.

*In this classification Professor O. T. Mason's pamphlet, entitled "Ethnological Directions relative to the Indian Tribes of the United States" (Washington, 1875), has been used to some extent.

C. Appurtenances.
Sweat-houses (models).
Totem-posts (originals and models).
Gable-ornaments (carved).
Locks (wooden).

(3.) *Furniture.*
Mats (of bark, grass, flax, etc.).
Screens.
Hammocks.
Bed-coverings.
Head-rests (Hoopa Indians, California).
Cradles.
Cradle-boards.
Chairs.
Stools.
Washing-vessels.
Tubs.
Pails.
Boxes.
Chests.
Lamps.
Brooms.
Fly-brushes.

(4.) *Vessels and other Utensils of Household Use.*

A Raw Material.
Stone.
Clay.
Roots.
Grass.
Rushes.
Osiers.
Splints.
Wood.
Horn.
Skin.
Membrane.
Dyes and Cements (for baskets, etc.).

B. Earthenware.
Cooking-vessels.
Ollas.
Spherical Jars.
Small-necked Jars.
Canteens.
Pitchers.
Dishes.
Trays.
Bowls.
Cups.
Ladles.
Spoons.
Ornamental Vessels.

C. Carved Horn and Wooden-ware.
Four-sided Vessels.
Trays.
Dishes.
Bowls.
Cups.
Dippers.
Spoons.
Ladles.
Stirring-sticks.

D. Carved Stone-ware.
Plates.
Trays.
Dishes.
Bowls.
Cups.

E. Water-tight and ordinary Basket-work.
Cups.
Bowls.
Flasks.
Carrying-bottles.
Baskets of various forms.

F. Bark Vessels.
Trays.
Bowls.
Pails.

G. Gourd Vessels.
Cups.
Bowls.
Carrying-bottles.

H. Skin and Bladder Bottles.

(5.) *Articles serving in the Use of Narcotics.*
Pipes.
Tobacco-pouches.
Cigar-cases.
Plates for cutting Tobacco.
Snuff-grinders.
Snuff-scrapers.
Snuff-boxes.
Snuff-tubes.

(6.) *Receptacles used in Transportation.*

A. On Foot.
Pouches.
Burden-straps.
Burden-nets.
Burden-baskets.

B. With Beasts of Burden.
Bags.
Raw-hide Cases.

(7.) *Clothing.*

A. Raw Material.
Fur.
Raw-hide.
Wool.
Hair.
Vegetable Fibre.

B. Complete Suits (in part exhibited on lay-figures).

C. Head-clothing.
Hats.
Caps.
Hoods.
Head-scarfs.

D. Body-clothing.
Robes.
Blankets.
Mantles.
Capes.
Shirts.
Tunics.
Coats.
Clouts.
Aprons.
Skirts.

E. Hand-clothing.
Mittens.
Gloves.

F. Leg and Foot-clothing.
Sandals.
Moccasins.
Shoes.
Boots.
Socks.
Stockings.
Leggins.
Garters.

G. Parts of Dress.
Bands.
Belts.

(8.) *Personal Adornment.*

A. Head-ornaments.
Wigs.
Chignons.
Hair-pins.
Tucking-combs.
Head-bands.
Feather Head-ornaments.
Labrets.
Nose-ornaments.
Ear-ornaments.

B. Neck-ornaments.
Necklaces.
Neck-bands.
Collars.

C. Breast and Body-ornaments.
Gorgets.
Ornamental Girdles.

D. Limb-ornaments.
Rings.
Bracelets.
Armlets.
Anklets.

E. Toilet Articles.
Substitutes for Soap.
Paints (mostly mineral).
(Paint-mortars).
Spatulæ (for face-painting).
Hair-powder.
Hair-dye.
Combs.
Head-scratchers.
Tweezers for removing the hair.
Mirrors.

(9.) *Implements for General Use, for War and the Chase, and for special Crafts and Occupations.*

A. Implements for General Use.

1. For Striking.
Hammers and Mauls.

2. For Cutting, Sawing, Perforating, etc.
Knives of various forms.
Hatchets.
Adzes.
Chisels.
Gouges.
Wedges.
Scrapers.
Skinning Implements.
Saws.
Drills.
Awls.
Cutting-blocks.
Tool-boards.
(Tool-boxes).
(Whet-stones).

B. Implements for War and the Chase.

1. Striking Weapons.
War-clubs (with or without metallic points or stone weights).
Tomahawks.

2. Throwing Weapons.
   Boomerangs (Moquis, etc.).
   Bolas.

3. Thrusting Weapons.
   Knives.
   Daggers.
   Swords.
   Lances.

4. Projectile Weapons and Appurtenances.
   Arrows.
   Bows.
   Quivers.
   Wrist-guards.
   Harpoons and Throwing-boards.
   Slings.

5. Defensive Weapons.
   Shields.
   Helmets.
   Visors.
   Body-armour.

C. Implements for Special Crafts and Occupations.

1. Implements for Hunting other than Weapons.
   Snares and Traps.
   Nets.
   Hooks for catching small Animals.
   Decoys.

2. Implements for Fishing other than Weapons.
   Hooks and Lines.
   Sinkers and Floats.
   Nets.
   Traps.

3. Implements and Utensils used in Gathering and Manufacturing Food.
   Root-diggers.
   Gathering and Winnowing-trays.
   Mortars and Pestles (of wood and stone).
   Stone Troughs or Slabs with Rubbing-stones.

4. Agricultural Implements.
   Spuds.
   Hoes.
   Rakes.
   Reaping-hooks.

5. Implements for Fire-making.
   Fire-sticks and Drills.
   Flint with Steel and Pyrites.
   Moss.
   Punk.
   Tinder.
   Slow-matches.
   Fire-nests.
   Fire-bags.

6. Implements for Arrow-making.
   Chipping-tools.
   Shaft-grinders.
   Shaft-straighteners.
   Glue-sticks.

7. Implements for making Pottery.
   Paddles.
   Smoothing-stones.

8. Implements for Twisting, Spinning, Weaving, Sewing and Embroidery.
   Fibre-twisters.
   Spindle-whorls.
   Reels.
   Knitting-needles.
   Looms with Woof-sticks and Shuttles.
   Awls.
   Needles.
   Needle-cases.

9. Implements for Basket-making.
   Plaiting-tools.

10. Implements for working Skins.
    Scrapers.
    Skin-softeners.
    Burnishers.
    Crimping-tools.

11. Implements for Carving.
    Knives.
    Gouges.

12. Implements for Painting (including Paints).
    Bristles.
    Paint-sticks.
    Brushes.
    Rubbing-stumps.
    (Paints).

(10.) *Means of Locomotion and Transportation.*

A. By Land.

1. Traveling on Foot.
   Ice-creepers.
   Snow-shoes.

2. Conveyances, etc.
   Saddles.
   Bridles.
   Halters.
   Stirrups.
   Spurs.
   Foot-mufflers.
   Dog-harnesses.
   Reindeer-harnesses.
   Sleds.
   Sleighs.

B. By Water.
   Balsas.
   Dug-outs.
   Bark Canoes.
   Bull-hide Boats.
   Kayaks.
   Oomiaks.
   Pushing-sticks.
   Paddles.
   Oars.
   Bailing-vessels.
   Spear-rests.

(11.) *Games and Pastimes.*

A. Gambling Implements.
   Pairs of Bones and Sticks.
   Bundles of Sticks.
   Discs.
   Dice.
   Ivory Blocks and Catching-sticks.
   Cards.
   Chess.

B. Dancing.
   Plumes.
   Wooden Masks and Head-dresses.
   Buffalo-head Masks.
   Head-shields.
   Hip-ornaments.
   Rattles.
   Batons.
   Spears.
   Scalps.

C. Athletic Exercises.
   Rackets.
   Sticks.
   Poles.
   Balls.
   Rings.
   Boundary-sticks.

D. Children's Sports and Toys.
   Dolls.
   Whirligigs.
   Tops.
   Miscellaneous Toys.

(12.) *Music.*

A. Instruments for Beating and Shaking.
   Drums.
   Sounding-bars.
   Rattles.
   Clappers.

B. Rubbing and Stringed Instruments.
   Notched Sticks.
   Cane Harps.
   Cane Fiddles.

C. Wind Instruments.
   Whistles.
   Fifes.
   Flutes.
   Trumpets.
   Horns.

D. Whizzers.

(13.) *Art.*

A. Pictorial Representations and ornamental Designs on Wood, Bark, Bone, Horn, Ivory, dressed Skin and Leather.

B. Carvings in Stone, Wood, Horn, Bone and Ivory.

C. Embroidery and other ornamental Work with Quills, colored Threads, Hair, Feathers, and Beads.

(14.) *Enumeration, etc.*

   Census-sticks.
   Dunning-sticks.

(15.) *Objects relating to Superstitions.*

   Idols.
   Charms.
   "Medicines."
   Medicine-bags.
   Medicine-boxes.
   Batons.
   Rattles.
   Drums.

(16.) *Objects relating to Funeral Rites and Burials.*

   Mourning-yokes.
   Mourning-bracelets.
   Dead-masks.
   Burial-frames.

INDEX.

Adair, 28, 30, 38, 74.
Adzes, with handles, 19.
Alaska, copper articles from, 62.
Appendix I., 93.
Appendix II., 97.
Archæological series, 1.
Armlets of copper, 61.
Arrow-heads, mostly small, 2.
" their abundance, 8.
" are still manufactured, 8.
" different shapes of, 9, 10.
Arundinaria macrosperma, 89.
Axes, grooved, 19, 20.

Bægert, 44.
Bancroft, Mr. H. H., 31, 70, 89.
Bartram, 46.
Beads of copper, 61.
" shell, 68.
" stone, 51.
Blackmore Museum, England, 45.
Boat-shaped articles, 32, 33.
Bone and horn, 63.
Bowls of stone, 37.

Calumet-pipes, 48.
Carvings of birds, etc. upon pipe-bowls, 46, 47.
Casts of pipes, 45.
" remarkable relics, 26.
Catlin, Mr., 28, 75.
Catlinite, or red pipe-stone, 50, 51.
Celts of jade in Mexico, 17.
Celts or Wedges, 17.
Chibouc of the Turks, 51.
Chisels, 18.
Chung-kee, an Indian game, 28.
Church, Prof. A. H., 45.
Clams as food, 70.
Clarke, Mr., 28.
Classification of the archæological series, 3.
Claws as ornaments, 64.
Clay images, 84, 85.
Clay, manufactures of, 73.
" vessels of, 77, 78, 79, 80.
Clay pipes, 84.
Cleu, Mr. J. F., 89.
Club-head-shaped stones, 31.
Coiled snakes in terra-cotta, 87.
Collections from Porto Rico, 4.
Columellæ of shells, 68.
Contents, V.
Cooking vessels, globular, 37.
Copper, 59.
Copper articles from Alaska, 62.
Copper harpoon-heads, 63.
Copper pipes, 45.
Coreal, 44.
Cups, hollowed out from the vertebræ of cetaceans, 63.
Cushing, Mr. F. H., 63.
Cutting and sawing implements, 13.
Cutting tools, 24, 25.
" different shapes of, 14.

Dall, Mr. W. H., 43.
Davis, Dr. E. H., 54.
Difficulties in determining the real character of stone implements, 2.
Discoidal stones, 28, 29.
Drilled ceremonial weapons, 23.
Drilling in stone, 54.
Drinking cups made of shells, 66.
Dug-outs, 88.
Dumont, 74.
Du Pratz, 28, 30, 74.

Egg-shaped stones, 32.
Epiphysis, pierced for ornament, 65.
Ethnological series, 1.
Ethnology, North American, 97.
Ewbank, Mr. Thomas, 81.

Fifes of bones, 63.
Fish-hooks of bone, 63.
Flakes of flint, obsidian, etc., of different shapes, 8.
Flint knives, hafted, 2.
Foot-tracks, sculptured, 57.
Foster, Mr. J. W., 59.

Gibbs, Gen. Alfred, 82.
Gibbs, Mr. Geo., 85.
Gibbs, Mrs., 82.
Globular cooking vessels, 37.
Gorgets made of shells, 71, 72.
Gouges and adzes, 18, 19.
Gold in grains, 60.
Greenstone, material for implements, 3.
Grinding and polishing tools, 34, 35.

Hafted stone and bone tools, 95.
Hafted stone weapons, 93.
Hammer-heads, grooved, 21
Hammer-stones, 22.
Harpoon-heads of bone, 63.
Henry, Prof., 89.
Hunter, Mr., 74, 75.

Ice-chisel from Unalaska, 18.
Implements and ornaments of bone, 64.
" of copper, 59, 60, 61.
" of stone
dagger-shaped, 14, 15.
leaf-shaped, 15.
wedge or celt-shaped, 17.
Indian tools for making stone arrow-heads, etc., 22.
Introduction, 1.

Jefferson, President Thomas, 56.
Jones, Col. Chas. C., 26, 32, 41, 71.
Jones, Dr. Joseph, 26.
Juet, Robert, 45, 59.

Knight of Elvas, 59.
Kohl, Mr., 44.

Lake Superior, ancient mining on the shores of, 59.

Lapis ollaris, 36.
Lartet and Christy, Messrs., 63.
Latimer, Mr. George, 4.
Lawson, 28.
Lewis and Clarke, Messrs., 28.
Loskiel, 74.

Mason, Prof. O. T., 97.
Matting of split cane, 89.
Metate, Mexican, 40.
Mexican carvings, 56.
" celts of jade, 17.
" clay figures, 85.
" knives, 3
" pottery, superior, 76.
" spindle-whorls, 87.
" statuettes, 86.
" vases, 82, 84.
Modes of hafting stone and bone implements, 93.
" manufacturing pottery, 74, 75.
Morgan, Mr. L. H., 39.
Mortars of stone and wood, 38, 39.
Motolinia, 8.
Mullers, 42.
Murray, Mr., 28.

Necklaces of claws, 64.
Needles of bone, 63.
Neolithic period, 7.
Net-sinkers, 27, 28.
Nilsson, Prof., 18.
Notches in pendants, probably denoting enumeration, 53.
Nut-stones, 40, 41.

Objects of wood, 88.
Obsidian points for arrows, 3.
Ornamented pestles, 43.
Ornaments, 26, 51, 52.

Pai-Utes, 2, 8.
Paint-mortars, 40, 41.
Palæolithic period, 7.
Pebbles, pierced for ornament, 52.
Pendants and sinkers, 26, 27.
Perforations made by drilling, 24.
Perforators, different shapes of, 12, 13.
Perforators of bone, 63.
" stone, 12.
Perry's Expedition to Japan, 5.
Pestles, 41, 42.
" for preparing food, 43.
Pierced tablets, 32, 33.
Pin-shaped articles made of marine univalves, 68.
Pipes, 45, 47, 49.
Plates of stone, 37.
Plummets, 26.
Porto Rico, collections from, 4.
Potstone, material for vessels, 36.
Pottery, 73.
" painted and decorated, 75, 81.
Powell, Major J. W., 2, 40.

Rattles made of shells, 68.
" of clay, 85.
Relics, prehistoric, from Europe, 4.
" of bone and horn from California and New York, 63.

Santa Barbara Islands, 31, 63, 88.
Schoolcraft, Mr., 33, 43.
Schumacher, Mr. Paul, 31, 37, 51, 63, 70, 72, 91.
Scraper-like implements, 25, 26.
Scrapers, different shapes of, 13.
" with handles, 13.
Sculptures, 54, 55, 57.
Serpentine, material for vessels, 37.
Shell-money, 70.
Shells used for ornament, 51, 52, 66, 69.
Shells, utensils of, 66, 67.
Silver, traces of, 60.
Smith, Captain John, 59.
Smithsonian Contributions to Knowledge, 45.
Spade-like implements, 25, 26.
Spear-heads, different shapes of, 11, 12.
" resemble large arrow-heads, 10.
Spear-heads, so-called, used with handles, 10.
Specimens from Central and South America, 4.
Spindle-whorls, Mexican, 87.
Squier, Mr. E. G., 4.
Squier & Davis, Messrs., 45, 46, 48.
Statuettes, Mexican, 86.
Stevens, Mr. E. T., 45.
Stone as raw material, 7.
" flaked and chipped, 7.
" implements, 90.
" " their use, often doubtful, 2.
Stone knives for cutting leather, 2.
Stone, pecked, ground and polished, 17.
Stone plates, 37.
" vessels, 36.
Stones, club-head-shaped, 31.
" discoidal, used in Indian games, 28, 29.
Stones, egg-shaped, 32.
" used in grinding and polishing, 34, 35.
Striped slate, material for ornaments, 53.
System adopted in arranging the Smithsonian collection relating to North American Ethnology, 97.

Tablets, pierced, 32, 33.
Teeth, perforated for ornaments, 64.
Terra-cotta figures, 84.
Tilhuggersteene, 22.
Tissues and implements from China and Japan, 5.
Tomahawks, 21.
Tools used by modern Indians, 22.
Torquemada, 8.
Toy canoes, 88.
Trichecus manatus, 46.
Tubes, 43, 44.
" ornaments or amulets, 43.
Tylor, Mr. E. B., 8.
Typical objects only described, 5.

Unalaska, ice-chisel from, 18.
Utensils made of shells, 67.

Vases, Mexican, 82, 84.
Venegas, 44.
Verazzano, 59.
Vessels of clay for culinary purposes, 73.
" stone, 36.

Wampum-beads, 68.
Weapons of parade, drilled, 23, 24.
Weapons, utensils, etc. from Asia, Africa, Australia, etc., 4.
Wedges or Celts, 17.
Weights for fishing-lines, 26.
Whipple, Lieut., 81.
Whistles of bird-bones, 63.
" clay, 85.
Whittlesey, Mr. Charles, 59.
Wilkes, Capt., 5.
Williams, Roger, 62, 68, 70.
Wood, manufactures of, 88.
Wyman, Prof. Jeffries, 71.

Yarrow, Dr. H. C., 31.

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.
331

THE PALENQUE TABLET

IN THE

UNITED STATES NATIONAL MUSEUM,

WASHINGTON, D. C.

BY

CHARLES RAU.

WASHINGTON CITY:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
1879.

ADVERTISEMENT.

The specimen which constitutes the subject of this memoir is a sculptured slab forming part of the celebrated tablet in the so-called Temple of the Cross at Palenque, in the State of Chiapas, Mexico, and was, many years ago, sent to the National Institute in Washington, and transferred thence to the custody of the Smithsonian Institution. The earlier figures and descriptions of this tablet gave it entire; those of later date represent only two-thirds of it; and the discovery of the missing portion in the National Museum at Washington has been a subject of great interest to archæologists, and among others to Professor Rau, who, as chief of the archæological division of the National Museum, has had his attention drawn for some time to this remarkable relic. Fully appreciating its interest, that gentleman has bestowed great pains on an investigation of its history and an attempt to analyze the glyphs with which it is covered. The results of his labors are now presented in a full description of the whole tablet, accompanied by a number of illustrations specially prepared for the work, and others kindly lent by Mr. H. H. Bancroft, of San Francisco. The author also gives a history of the explorations of the ancient city of Palenque, an account of works describing the ruins, and a chapter on aboriginal writing in Mexico, Yucatan, and Central America, in which he presents his views concerning the manuscripts and glyphs of Maya origin.

In accordance with the usage of the Institution, this memoir has been submitted to Messrs. S. F. Haven, of Massachusetts, and H. H. Bancroft, of California, who have recommended its publication as a Smithsonian Contribution to Knowledge.

It will undoubtedly be welcomed as a valuable addition to the literature of a subject attracting so much attention at the present day.

SMITHSONIAN INSTITUTION,
WASHINGTON, D. C., *November*, 1879.

SPENCER F. BAIRD,
Secretary Smithsonian Institution.

PREFACE.

It has been my endeavor to refrain in the following monograph from advancing any views incompatible with the data at my command. Such a course was imperatively demanded, in consideration of the strangely diverging opinions now current with regard to the former state of civilization in Mexico and Central America. While there prevails in certain quarters a disposition to overrate the culture of the ancient inhabitants of those countries, the adherents of another school, in their eagerness to support favorite theories, evidently err in the opposite direction. Neither of these modes of procedure will lead to a just appreciation of the conditions they purport to elucidate.

The thanks of the Smithsonian Institution and my own are due to Mr. H. H. Bancroft for the loan of the electrotypes of Figures 1, 2, 4, 5, 7, 10, 13, 14, 15 and 17, which are among the illustrations of his "Native Races of the Pacific States." The frequent allusions to that work in this publication are the tribute I pay to its value.

C. R.

CONTENTS.

Chapter I. History of the Palenque Tablet . . . . . Page 1
Chapter II. Explorations of Palenque 5
Chapter III. The Temple of the Cross 15
Chapter IV. The Group of the Cross 31
Chapter V. Aboriginal Writing in Mexico, Yucatan and Central America . . . 47
Appendix: Notes on the Ruins of Yucatan and Central America 65

LIST OF ILLUSTRATIONS.

PLATES.

The Palenquean Group of the Cross.

The Palenque Tablet in the United States National Museum.

ILLUSTRATIONS IN THE TEXT.

Fig. 1. Plan of Palenque (after Waldeck) . . . . . Page 16

Fig. 2. Temple of the Cross—Front Elevation (after Stephens) 22

Fig. 3. Temple of the Cross—Side View (after Waldeck) 22

Fig. 4. Temple of the Cross—Ground Plan (after Stephens) 22

Fig. 5. Statue belonging to the Temple of the Cross (after Stephens) 29

Fig. 6. Part of the Tablet of the Cross (after Del Rio, reduced) 32

Fig. 7. Part of the Tablet of the Cross (after Waldeck, reduced) 33

Fig. 8. Part of the Middle Slab of the Tablet of the Cross after Charnay's Photograph, joined to the corresponding Part of the Smithsonian Slab 35

Fig. 9. Part of a Figure in the Fejérváry Manuscript (after Kingsborough) 45

Fig. 10. Landa's Maya Alphabet 48

Figs. 11 and 12. Examples of Mexican Writing 51

Fig. 13. Glyphs on the Left Tablet in the Temple of the Cross (after Waldeck) 58

Fig. 14. Days of the Maya Calendar (Landa) 60

Fig. 15. Months of the Maya Calendar (Landa) 60

Fig. 16. Index Diagram of the Glyphs on the Tablet of the Cross 61

Fig. 17. Restoration of the Palace and the Temple of the Three Tablets at Palenque (after Armin) 65

CHAPTER I.

HISTORY OF THE PALENQUE TABLET.

THE collections of the "National Institute for the Promotion of Science," established at Washington about forty years ago, were transferred in 1858 from the United States Patent Office to the care of the Smithsonian Institution. Among the objects of archæological interest were several fragments composing a large rectangular stone slab covered with glyphic designs in bas-relief, which had been presented to the National Institute by Mr. Charles Russell, consul of the United States at Laguna, on the Island of Carmen, State of Campeche, Mexico. The fragments had been obtained at Palenque, and reached Washington in 1842, having been packed in two boxes which arrived in different months of that year. The boxes, it appears, had been forwarded by Messrs. Howland & Aspinwall, in New York. The National Institute received at the same time a letter from Mr. Russell, dated Laguna, March 18th, 1842, in which he stated he had sent to the National Institute, per ship "Eliza and Susan," fragments of a tablet from the ruins of Palenque, and by the "Gil Blas" other pieces of the same tablet, which made it complete. These scanty facts are taken from the "Third Bulletin of the Proceedings of the National Institute, from February, 1842, to February, 1845." The letter in question is probably lost, as I could not find it among the remaining documents of the National Institute (now in the Smithsonian Institution), though I made a careful search for it. I regret being unable to communicate any details concerning the removal of the fragments from the celebrated ruins of Palenque. The explorer, Stephens, and his companion, Catherwood, the artist, were hospitably entertained by Mr. Russell on their visit to Laguna in 1840. They had just finished their exploration of Palenque, and it is not unlikely that they imparted some of their archæological enthusiasm to Mr. Russell, who may have visited the ruins and taken away the fragments. This, of course, is merely a surmise; for it is equally possible that they were removed, perhaps through the consul's instrumentality, by some other person or persons. Mr. Russell was a native of Philadelphia, but had been long absent from the United States at the time of Mr. Stephens's visit. He was married to

a Spanish lady of large fortune.* According to information received from the Department of State, he was appointed consul of the United States at Laguna on the 5th of March, 1839, and died, while in that capacity, on the 10th of February, 1843.

There was some correspondence between Messrs. Russell and Stephens after the last-named gentleman's return to the United States. Before leaving Palenque, Stephens had instructed a Mr. Pawling to take plaster casts of its more important tablets, ornaments, etc., and arrangements had been made that these casts should be forwarded to the United States by Mr. Russell. Pawling's work, however, was suddenly brought to a close by an order from the governor of Chiapas, and the casts thus far made were seized and retained. It is not altogether improbable that Mr. Pawling, while engaged at Palenque, collected the fragments of the tablet and sent them to the American consul, who forwarded them to the National Institute at Washington. Mr. Stephens had cherished the plan "to lay the foundation of a Museum of American Antiquities, which might deserve the countenance of the General Government, and draw to it Catlin's Indian Gallery, and every other memorial of the aboriginal races, whose history within our own borders has already become almost a romance and fable."†

I am indebted to Mr. Titian R. Peale, of Philadelphia, for information as to the history of the tablet after its arrival in Washington. On the return of the United States Surveying and Exploring Expedition to the South Seas, under Lieutenant Wilkes, the collections made during that expedition were sent to the Patent Office at Washington, and Mr. Peale was appointed to arrange them, with other collections then in the Patent Office, in the hall of that building. Among the antiquities here deposited were the fragments of the Palenquean tablet, which, as Mr. Peale expressly states, fitted exactly together. The tablet excited some interest at the time, but no one, it seems, as yet duly appreciated its archæological importance. Subsequently, in 1848, when the Prussian envoy to the United States, Baron von Gerolt, solicited a plaster cast of it for his government, Mr. Peale employed Mr. Clark Mills, the sculptor, for making one, which the Prussian ambassador sent to Berlin. It is not mentioned in Professor A. Bastian's catalogue of the ethnological department in the Royal Museum at Berlin.‡ The mould remained at the Patent Office until it was removed to the Smithsonian Institution, together with the collections of the National Institute. It probably had become unfit for further use in 1863; for in that year the late Professor Joseph Henry, first Secretary of the Smithsonian Institution, charged Dr. George A. Matile, then connected with that establishment,§ to make a new mould, in order to obtain a perfect cast of the slab. This work was success-

* Stephens: Incidents of Travel in Central America, Chiapas, and Yucatan; vol. ii, p. 390.

† Ibid.; vol. ii, Appendix.

‡ This catalogue was published in 1872.

§ Now in the United States Patent Office.

fully performed. While thus engaged, Dr. Matile, who was familiar with Mr. Stephens's works, recognized the Smithsonian tablet as one of the three stone slabs, which, placed together, bore on their surface the sculpture of the famous Group of the Cross, forming the chief ornament of one of the buildings of Palenque, which for this reason has become known as the "Temple of the Cross." The middle slab and that originally joining it on the left have been described and figured by late explorers; but the one which completed the sculptured group, and is now preserved in the Smithsonian building, probably was already broken into fragments before 1832, when Waldeck explored the ruins of Palenque. Stephens, who was there eight years afterward, certainly noticed its scattered pieces. It therefore has not been represented by either of them; but Del Rio and Dupaix, to whom we are indebted for the earliest reports on the ruins of Palenque, still saw it in its proper place, as I shall have occasion to show hereafter.*

Dr. Matile announced the identification of the tablet in an article entitled "American Ethnology," which was written in 1865, but published in Barnard's "American Journal of Education" for January, 1868. The passage in which he explains the true character of the tablet occurs on page 431 of the Journal. Indeed, a mere comparison of the designs on the Smithsonian slab with the representations of the Palenque slabs belonging to the Group of the Cross, as given by Stephens, shows most plainly that the former is the complement of the latter. Yet the credit of having first pointed out that fact belongs to the above-named gentleman.

A few years afterward the tablet was again broken, in consequence of an unlucky accident which happened on its being removed to another place in the Smithsonian building. However, it has been successfully restored, Dr. Matile's fac-simile in plaster enabling the artist to replace with perfect precision the injured portions of the sculptured surface; and it is now exhibited, solidly framed, in the United States National Museum (in charge of the Smithsonian Institution), where it attracts considerable attention on the part of the numerous visitors.

In 1873 the Smithsonian Institution sent a photograph of the tablet to Dr. Philipp J. J. Valentini, of New York, a gentleman much interested in the study of Mexican and Central American antiquities, and author of a treatise on the Mexican calendar-stone, which appeared first in German in pamphlet form,† and was immediately afterward translated into English by Mr. Stephen Salisbury, Jr., and published in the "Proceedings of the American Antiquarian Society"

---

* A short notice by Juarros is the first *printed* reference to the ruins, as far as I know. It is given in full on page 7. This author's work appeared in 1808–18, Del Rio's report in 1822.

† Vortrag über den Mexicanischen Calender-Stein, gehalten von Prof. Ph. Valentini, am 30. April 1878, etc.; New York, 1878.

(No. 71), Worcester, Mass., 1878. Upon the receipt of the photograph, Dr. Valentini, of course, noticed at once that it represented the missing slab of the Temple of the Cross at Palenque, and he communicated his discovery to Professor Henry in a letter dated March 4th, 1873. He had arrived at this result without possessing any knowledge of Dr. Matile's prior statement to the same effect.

Not long ago, while re-reading Stephens's excellent volumes on Central America, Chiapas, and Yucatan, I was naturally led to a close examination of the Palenquean relic in the Smithsonian Institution, and, in consideration of its great archæological importance, I conceived the plan of describing it and figuring it in juxtaposition with Catherwood's well-known delineation of the Tablet of the Cross in Vol. II of Stephens's "Incidents of Travel in Central America, Chiapas, and Yucatan." I am confident that my effort to present the celebrated bas-relief in its original completeness will meet the approval of all interested in that remarkable people who reared the great palace and the temples of Palenque.

The accompanying outline plate is a reproduction of Stephens's illustration, to which is added on the right side a correct delineation of the complemental Smithsonian tablet. The dotted vertical line, almost touching the extreme curve of the tail of the bird surmounting the cross, marks the joining of the left and middle tablets. This line has not been indicated by Mr. Catherwood.

Before entering upon the description of the tablet, I shall have to mention a number of collateral facts, the knowledge of which will promote a better understanding of the subject to which this monograph is devoted.

CHAPTER II.

EXPLORATIONS OF PALENQUE.

In this chapter I purpose to give, in chronological order, and as succinctly as possible, an account of the principal explorations of the ancient city, comprising all those to which subsequent reference will be made.

The ruins of Palenque are called after the picturesque village of Santo Domingo del Palenque,* about eight miles distant from them, and situated in the Mexican State of Chiapas, bordering on the Republic of Guatemala. Indeed, Chiapas formed a province of Guatemala during the period of Spanish supremacy; but immediately after the declaration of independence under Iturbide (in 1821), the province became a part of Mexico, in virtue of a vote of its inhabitants. The aboriginal name of the ruined city is not known,† and the early works treating of those parts of America make no mention of the place. Cortés, on his famous expedition to Honduras (1524–1526), undertaken for the purpose of quelling the defection of his lieutenant, Cristóval de Olid, doubtless passed at no considerable distance from the locality now called Palenque. "If it had been a living city," says Mr. Stephens, "its fame must have reached his ears, and he would probably have turned aside from his road to subdue and plunder it. It seems, therefore, but reasonable to suppose that it was at that time desolate and in ruins, and even the memory of it lost."‡ Mr. Prescott makes a similar observation: "The army (of Cortés)," he says, "was now at no great distance from the ancient city of Palenque, the subject of so much speculation in our time. The village of Las Tres Cruzes, indeed, situated between twenty and thirty miles from Palenque, is said still to commemorate the passage of the conquerors by the existence of three crosses which they left there. Yet no allu-

* Founded about the year 1564 by Pedro Laurencio, a Dominican missionary among the Tzendal Indians. According to Morelet, it has now a population of six hundred souls, but was formerly considered a flourishing town.

† "The word *palenque* is of Spanish origin, and means a stockade or enclosure of palisades. How it came to be applied to the village of Santo Domingo is not explained, but there is not the slightest reason to suppose that it has any connection with the ruins."—*Bancroft: The Native Races of the Pacific States;* vol. iv, p. 294.

‡ Stephens: Central America, etc., vol. ii, p. 357.

sion is made to the ancient capital. Was it then the abode of a populous and flourishing community, such as once occupied it, to judge from the extent and magnificence of its remains? Or was it, even then, a heap of mouldering ruins, buried in a wilderness of vegetation, and thus hidden from the knowledge of the surrounding country? If the former, the silence of Cortés is not easy to be explained."*

There is a dim tradition relating to the origin of Palenque—certainly of doubtful value, but nevertheless of sufficient interest to be mentioned in this place. Indeed, the early history of Central America and Yucatan offers but few points of support to the investigator. "This history, or rather the recollection of it," says Brasseur de Bourbourg, "is merely founded upon a small number of traditions no less obscure than confused. The chronology is defective in the same measure, and that to which we try to link the principal events in the annals of Yucatan is characterized by the most arid laconism."† Such is the avowal of an author well known for the hardihood with which he throws out his speculations, and whose really great learning scarcely can dispel the distrust roused by his extravagant conclusions. Yet, notwithstanding these drawbacks, he has brought to light many interesting details bearing on the former state of those countries, and his works are, and long will be, indispensable to the student of American history. What Brasseur states concerning the founding of Palenque is chiefly taken from a curious manuscript by Don Ramon de Ordoñez y Aguiar, a native of Ciudad Real de Chiapas, who died about 1840, at an advanced age, as canon of the cathedral of that city. The comprehensive title of the manuscript, "Historia de la Creacion del Cielo y de la Tierra" (History of the Creation of Heaven and Earth), discloses at once the unmeasured range of his imagination. The account, as given by Brasseur, is the following:—It was several centuries before the Christian era, when there arrived at the Laguna de Terminos a small fleet of barks, from which a distinguished person, called Votan, accompanied by other chiefs of his race, went ashore. He came from a place called Valum-Votan, or "Land of Votan," which the commentator (Ordoñez) believes to have been the Island of Cuba. Votan penetrated, apparently unmolested by the natives,‡ into the country, ascending the Usumacinta, and near one of the affluents of this river Central American civilization is supposed to have taken its origin; for, during his sojourn in this region, a city arose at the foot of the

* Prescott: Conquest of Mexico; vol. iii, p. 281.

† Brasseur de Bourbourg: Histoire des Nations Civilisées du Mexique et de l'Amérique-Centrale; Paris, 1857–9, tom. ii, p. 2.—He refers to a Maya manuscript treating of the principal epochs in the history of Yucatan before the conquest. It was presented by Don Juan Pio Perez, a Yucatec scholar, to Mr. Stephens, who published it with an English version in the appendix to the second volume of his work on Yucatan. The manuscript was written from memory by an Indian, at some time not designated.

‡ Brasseur believes they were Tzendals. Remnants of this people still live in the neighborhood of Palenque.

Tumbala Mountains,* which became the metropolis of a large empire. This city was called Nachan (City of the Serpents), † and the remains of its buildings are the now much admired ruins of Palenque. ‡ I must abstain from following in this place the further career of Votan, which is narrated, according to the tradition, in the works of Brasseur and Bancroft.

According to Juarros, the historian of Guatemala, the ruins of Palenque were discovered about 1750 by a party of Spaniards traveling in the Province of Chiapas ;§ but Stephens doubts this account, being rather inclined to believe that the existence of the ruins was revealed by the Indians, who had clearings in different parts of the forest for their corn-fields, or, perhaps, had known them from time immemorial, and caused the neighboring inhabitants to visit them.‖ The Abbé Brasseur de Bourbourg, on the other hand, states that the ruins were accidentally discovered, in 1746, by the young nephews of the Licentiate Antonio de Solis, then residing at Santo Domingo, which formed a part of his diocese.¶ Though the news of this discovery spread through the country, the Guatemalan government paid for a long time no attention to it, either from want of appreciation, or because other matters deemed more important claimed its care. In 1773, however, Ramon de Ordoñez induced one of his brothers and several other persons to explore the ruins, and their information enabled him to draw up a report, which finally, in 1784, reached Don José Estacheria, President of the Guatemalan Audiencia Real. This functionary becoming interested in the subject, instructed in the same year José Antonio Calderon, Lieutenant Alcalde

---

* Called Cerro del Naranjo on the new map of Yucatan, compiled by Hübbe and Perez, and revised by Berendt (1878).

† Culhuacan and Huehuetlapallan are other names supposed by some to have been applied to the city.

‡ Brasseur de Bourbourg: Histoire des Nations Civilisées etc.; tom. i, p. 68.

§ "St. Domingo Palenque, a village in the Province of Tzendales, on the borders of the intendancies of Ciudad Real and Yucatan. It is the head of a curacy; in a mild and salubrious climate, but very thinly inhabited, and now celebrated from having within its jurisdiction the vestiges of a very opulent city, which has been named Ciudad del Palenque; doubtless, formerly the capital of an empire whose history no longer exists. This metropolis,—like another Herculaneum, not indeed overwhelmed by the torrent of another Vesuvius, but concealed for ages in the midst of a vast desert,—remained unknown until the middle of the eighteenth century, when some Spaniards, having penetrated the dreary solitude, found themselves, to their great astonishment, within sight of the remains of what once had been a superb city, of six leagues in circumference; the solidity of its edifices, the stateliness of its palaces, and the magnificence of its public works were not surpassed in importance by its vast extent; temples, altars, deities, sculptures, and monumental stones bear testimony to its great antiquity. The hieroglyphics, symbols, and emblems, which have been discovered in the temples, bear so strong a resemblance to those of the Egyptians, as to encourage the supposition that a colony of that nation may have founded the city of Palenque, or Culhuacan. The same opinion may be formed respecting that of Tulhá, the ruins of which are still to be seen near the village of Ocosingo, in the same district."—*History of the Kingdom of Guatemala etc., by Don Domingo Juarros. Translated by J. Baily;* London, 1823, p. 18.—*Compendio de la Historia de la Ciudad de Guatemala. Escrito por el Br. D. Domingo Juarros;* Guatemala, 1808–18, tom. i, p. 14.

Judging from this description, one would form a very poor opinion of the district in which Palenque is situated. Modern travelers, however, praise its beautiful scenery, especially Morelet and Charnay.

‖ Stephens: Central America, etc.; vol. ii, p. 294.

¶ Brasseur de Bourbourg: Monuments Anciens du Mexique; Paris, 1866, p. 3.

Mayor of Santo Domingo, to make further explorations, and in 1785, an Italian, Antonio Bernasconi, royal architect in Guatemala, was ordered to continue the survey. Their reports, accompanied by drawings, never published as far as known, remained in manuscript, but were translated, in part at least, into French by Brasseur de Bourbourg, and published in his large work on Palenque ("Monuments Anciens du Mexique"), of which an account will be given on a subsequent page. The manuscripts in question, having been sent to Spain, were used by the royal historiographer, Muñoz, in a report on American antiquities made by order of the king.*

The first exploration of the ruins which led to a direct, though much retarded, result was that by Captain Antonio del Rio, undertaken in 1787, pursuant to a royal decree issued May 15th, 1786. His report is dated Palenque, June 24th, 1787, and addressed to Don José Estacheria, "Brigadier, Governor and Commandant General of the Kingdom of Guatemala, etc." It was sent to Spain, accompanied by many drawings; but copies having been retained in Mexico and Guatemala, one of them was obtained by a gentleman who had resided many years in the last-named city—a Dr. McQuy—and brought by him to London, where it was translated into English, and printed in 1822 by Henry Berthoud. It forms a small quarto and bears the title: "Description of the Ruins of an Ancient City, discovered near Palenque, in the Kingdom of Guatemala, in Spanish America; translated from the Original Manuscript Report of Captain Don Antonio del Rio, etc." The title further informs us that the work contains the "Teatro Crítico Americano, etc.," by Dr. Paul Felix Cabrera, which is one of the many attempts to show how America was peopled. Though it appears that no drawings accompanied Del Rio's manuscript report from which the English translation was made, the latter is, nevertheless, illustrated by seventeen lithographic plates. These delineations were executed by M. Frédéric de Waldeck, after copies of the drawings of Castañeda, the artist employed by Captain Dupaix, the succeeding explorer of Palenque. The copies in question, for some time in possession of M. Latour-Allard, of Paris, passed afterward into English hands. In the few copies of Del Rio's work examined by me nearly every plate is marked with the initials F. W. or J. F. W., which stand for "Frédéric Waldeck" or "Jean-Frédéric Waldeck." One plate, moreover, is signed with his full name. Del Rio's illustrations, as given in the English translation, are substantially those of Dupaix, only somewhat improved, more

---

* Bancroft: Native Races etc.; vol. iv, p. 289, note. This note extends over several pages and embraces a full account of the explorations by which the ruins of Palenque have been made known, and of the many reports and books resulting from these explorations. Though my information in regard to the latter is derived from original sources, I have taken various details from this excellent résumé; others I obtained from the Abbé Brasseur's "Monuments Anciens du Mexique," a work containing the most extensive account of Palenque as yet published. It was not within my reach when I commenced this monograph.

especially with regard to the contours of the human figures. Even the errors in Castañeda's delineations, which have become obvious by later and more correct representations of the same objects, are reproduced in the plates illustrating the English translation of Del Rio's report. Thus, the totally incorrect position of the glyphs in the Group of the Cross is shown in Del Rio's plate as well as in that of Dupaix, and similar defects, common to both and surely not resulting from accident, can be pointed out. As for Del Rio's descriptions, they certainly have some merit, though they lack the precision and completeness of those of later investigators. The plates not being numbered, the references to them are in many cases obscure, and, indeed, would be unintelligible, if it were not for the surer guidance afforded by more recent publications on Palenque.*

Of far greater importance were the three expeditions made, pursuant to a royal order, from 1805 to 1808, by William Dupaix, a retired captain of Mexican dragoons, for exploring the antiquities of Mexico. He was accompanied by Luciano Castañeda, engineer and draughtsman, a secretary, and a military escort. In the course of his third expedition, in 1807, he reached Palenque, where he was engaged for several months in a thorough examination of the ruins. His manuscript report and drawings were to be sent to Spain; but the outbreak of the Mexican revolution frustrated this design, and they remained during those troublous times in the custody of Castañeda, who deposited them in the museum of the city of Mexico.

In the meantime the Latour-Allard copies of Castañeda's drawings were re-copied by Augustine Aglio, and published in 1830, in Vol. IV of Lord Kingsborough's "Mexican Antiquities." Thirty-four of the many plates composing this volume relate to Palenque. A copy of the Spanish text of Dupaix's report, obtained by Lord Kingsborough in a manner not explained, appeared in 1830, as a part of Vol. V of the above-named work, under the title "Viages de Guillelmo Dupaix sobre las Antiguëdades Mejicanas," and an English translation of the same, headed "The Monuments of New Spain, by M. Dupaix," was given, in 1831, in the sixth of Kingsborough's magnificent but unwieldy tomes. Thus, the merit of having first laid before the world the results of Dupaix's labors is due to the unexampled zeal of that nobleman, who sacrificed time and fortune in the enterprise of collecting and publishing all existing documents calculated to elucidate the history and arts of ancient Mexico.

---

* I know two German translations of Del Rio's report, namely: "Huehuetlapallan, Amerika's grosse Urstadt in dem Königreich Guatimala. Neu entdeckt vom Capitain Don Antonio del Rio etc." Mit 17 grossen Zeichnungen in Steindruck; Meiningen, 1824; and—Von Minutoli: "Beschreibung einer alten Stadt, die in Guatimala (Neuspanien) unfern Palenque entdeckt worden ist. Nach der englischen Uebersetzung der spanischen Originalhandschrift des Capitän Don Antonio del Rio etc." Mit 14 lithogr. Tafeln; Berlin, 1832. According to Mr. Bancroft, a French translation by M. Warden was published by the Société de Géographie, with a part of the plates, and the original Spanish of Del Rio's report appeared in 1855, in the "Diccionario Universal de Geografia etc.," tom. viii, pp. 528–33.

In 1828 the manuscripts and drawings of Dupaix were handed over by the Mexican government to M. H. Baradère and taken by him to Paris, where they were published, in 1834, in two large folios as "Antiquités Mexicaines. Relation des Trois Expéditions du Capitaine Dupaix, ordonnées en 1805, 1806, et 1807, pour la Recherche des Antiquités du Pays, notamment celles de Mitla et de Palenque; accompagnée des Dessins de Castañeda, etc. Suivie d'un Parallèle de ces Monuments avec ceux de l'Égypte, de l'Indostan et du Reste de l'Ancien Monde, par M. Alexandre Lenoir, etc." The first volume opens with a dedication to the Mexican Congress by M. Baradère, and contains, in addition to the other matter, notes and commentaries from several authors (Warden, Farcy, Baradère and De Saint-Priest); Dupaix's report is given in Spanish and French. An atlas of one hundred and sixty-six plates constitutes the second volume.

Among the writers to whom reference will be made in the following pages I have to mention Colonel Juan Galindo, who communicated papers on Mexican and Central American antiquities to learned societies in Europe and America. Of special interest in its bearing on Palenque is a letter addressed to the Geographical Society of Paris, dated April 27th, 1831, and published in the "Antiquités Mexicaines" among the appended notes and documents as "Notions transmises par M. Juan Galindo, Officier Supérieur de l'Amérique Centrale, sur Palenque et autres Lieux Circonvoisins." Another communication, relating to the ruins of Copan and incidentally to those of Palenque, was sent by him to the Hon. Thomas L. Winthrop, President of the American Antiquarian Society. It is dated Copan, June 19th, 1835, and was published in the second volume of the "Archæologia Americana."*

For the most extensive exploration of the Palenquean ruins we are indebted to the before-mentioned French artist, Jean-Frédéric de Waldeck, who was born in 1766, and died in 1875, at the far advanced age of one hundred and nine years. In 1798 he accompanied the famous scientific expedition to Egypt as a volunteer, and traveled afterward in various parts of Africa, encountering many dangers and hardships. In the year 1819 he visited Chile and other parts of America. After his return to France, while engaged in copying the plates for Del Rio's work, he thought he discovered deficiencies in those designs, and it became his settled resolve to undertake a personal exploration of the ruins. In 1832, at the age of sixty-six, when most men feel a desire to retire from the cares and troubles of active life, he arrived, full of vigor and enthusiasm, at Palenque, and built himself a dwelling at the foot of the pyramid supporting the Temple

* Colonel Galindo's tragic fate has been described by Mr. Stephens in his work on Central America, etc., vol. i, p. 423. Serving under General Morazan, he perished after a disastrous encounter near Tegucigalpa, in Honduras. This happened during Mr. Stephens's visit.

of the Cross, where he lived, according to his own statement, two years,* busily engaged in surveying and drawing the ruins. The means for carrying on this work had partly been furnished by the Mexican government, then in the hands of Bustamante.

Many years, however, passed by after his return to France, before the results of his labors became known to the world. Finally, in 1860, the French government appointed Messrs. Mérimée, Angrand, Longpérier, Aubin, De Saint-Priest and Daly as a commission to examine Waldeck's drawings and to report on their merit; and the verdict being favorable, the plates deemed worthy of publication were selected for execution. Waldeck's text, however, was rejected, and the literary part of the work entrusted to the pen of Brasseur de Bourbourg. It appeared at Paris, in 1866, as a large folio volume entitled "Monuments Anciens du Mexique. Palenqué et autres Ruines de l'Ancienne Civilisation du Mexique. Collection de Vues, Bas-reliefs, etc., dessinés par M. de Waldeck. Texte rédigé par M. Brasseur de Bourbourg." The title further states that the work was published under the auspices of the Minister of Public Instruction. It is divided into the following sections: 1. *Avant-propos*, containing M. Léonce Angrand's report on Waldeck's drawings, addressed to the Minister of Public Instruction, and other details concerning the publication of the volume; 2. *Introduction aux Ruines de Palenqué*, treating of the discovery of the ruins and of the different reports relating to them (Calderon, Bernasconi, Muñoz, Del Rio, Dupaix, Stephens, Morelet, Charnay); 3. *Recherches sur les Ruines de Palenqué et sur les Origines de l'Ancienne Civilisation du Mexique;* eight chapters, embracing an elaborate essay on the Mexican and Central American nations: their traditions, migrations, mythology, customs, etc.; 4. *Description des Ruines de Palenqué et Explication des Dessins qui y ont rapport. Rédigées par M. de Waldeck*—his only literary contribution to the work. It is nothing but a descriptive list of the plates, and covers only eight pages. "The publishers," says Bancroft, "probably acted wisely in rejecting Waldeck's text as a whole, since his archæological speculations are always more or less absurd; but it would have been better to give his descriptive matter more in full."† As a consequence, it follows that the new information concerning the ruins themselves, as given in the work, must almost exclusively be derived from the plates. The learned Abbé who acted as editor could add no new facts, not having visited

* Waldeck: Voyage Pittoresque et Archéologique dans la Province d'Yucatan; Paris, 1838, p. VII.—This work is a richly illustrated large folio volume, which the author dedicated to Lord Kingsborough, who had generously furnished him with means for pursuing his investigations. The archæological part chiefly relates to the ruins of Uxmal. This exploration is of later date than that of Palenque; but he hastened the publication of the work, fearing some one might take hold of the subject, his drawings having been confiscated by order of President Santa Anna, the head of the same government, he says, which formerly had lent him its assistance. He had kept, however, duplicates of his designs, which enabled him to illustrate the volume. He complains bitterly of this treatment, calling the Mexicans barbarians who want to be considered as an enlightened people.

† Bancroft: Native Races etc., vol. iv, p. 293.

Palenque when the "Monuments Anciens" appeared. He saw the ruins several years afterward, in 1871.

Waldeck's plates are splendid lithographs, fifty-six in number, of which forty relate to Palenque. Yet, though the artistic merit of these delineations is worthy of the highest praise, they certainly create in the beholder some doubts as to their being absolutely faithful likenesses of the objects they represent. Like many other artists, Waldeck evidently had a tendency to use the pencil with improving effect—a quality which did not escape the notice of the experts selected for examining his drawings, and which was mildly designated in M. Angrand's report as a disposition to attempt restorations (*un penchant aux restaurations*). I am under the impression that his drawings show the anatomical proportions of the human figures much better than the sculptures themselves warrant. This is certainly the case with the standing figures of the middle slab in the Group of the Cross, which I have compared with Charnay's corresponding photograph, of which more will be said hereafter. Considerations like these, I may state in this place, have influenced me to reproduce as the principal illustration in this monograph Catherwood's representation of the bas-relief, in preference to that given by Waldeck. I will admit, however, that in such a case no one who has not seen the original can fairly estimate the merit of its delineation.

In 1839 Mr. John Lloyd Stephens, of New Jersey, was entrusted by President Van Buren with a diplomatic mission to Central America: an office leaving him much time for travel and that special kind of exploration which he had before successfully pursued in Egypt, Arabia and Palestine. He surveyed within ten months eight ruined cities, and published upon his return to the United States his well-known "Incidents of Travel in Central America, Chiapas, and Yucatan."* These volumes were illustrated by his fellow-traveler, the artist Frederick Catherwood, of London. While they were going through the press, he embarked again, in company with Mr. Catherwood, for Yucatan, where his extensive explorations of ruins furnished him with the material for his succeeding work "Incidents of Travel in Yucatan."† Stephens's reputation as a talented and veracious author is so well established that any additional laudatory remarks almost appear superfluous; and a large share of praise is likewise due to Catherwood, the skillful delineator.

"Respecting the ability of these explorers," says Mr. Bancroft, "and the faithfulness of their text and drawings, there can be but one opinion. Their work in Chiapas is excelled only by that of the same gentlemen in Yucatan."‡

Hardly less emphatic is the approval of the Abbé Brasseur de Bourbourg, himself a traveler in those regions. Referring to "Incidents of Travel in

* First edition: New York, 1842 (2 volumes).
† First edition: New York, 1843 (2 volumes).
‡ Bancroft: Native Races, etc.; vol. iv, p. 293.

Yucatan," he says:—" Malgré quelques imperfections, ce livre restera toujours un ouvrage de premier ordre pour les voyageurs et les savants; c'est là qu'on trouve pour la première fois, avec une fidélité presque photographique, cette série de monuments dont l'Égypte elle-même se serait enorgueillie, et à l'authenticité desquels M. Charnay est venu, il y a trois ans à peine, apporter avec ses belles photographies le plus éclatant témoignage."* My late friend, Dr. Carl Hermann Berendt, who had seen nearly all the sites visited by Stephens, repeatedly assured me that, with the explorer's volumes as guides, he had found himself perfectly at home among the ruins described by him.

Stephens's account of Palenque, which chiefly will be considered in the present case, occupies a considerable portion (pages 289 to 365) of Vol. II of the first-named of his works, and most of the illustrations of that volume represent Palenquean buildings and bas-reliefs. Considering that his *actual* survey of the ruins, made in May, 1840, occupied only twenty days, which, moreover, were rendered unpleasant by the rainy season, the amount of work done by him and his associate is really astonishing. It should also be borne in mind that, though Waldeck explored the ruins of Palenque several years before Stephens and Catherwood, the last-named gentlemen published their results at a much earlier day, and consequently could not in any way profit by the labors of their predecessor.

The next visit to Palenque claiming our attention was made by the naturalist, M. Arthur Morelet, who spent in 1846 a fortnight among the ruins, as he states in his " Voyage dans l'Amérique Centrale, l'Ile de Cuba et le Yucatan;" Paris, 1857. The more important portion of the work was translated into English by Mrs. M. F. Squier, and appeared as "Travels in Central America, etc.;" New York, 1871. Referring to preceding explorers, M. Morelet attempts no description of the ruins; but his account is of much interest in other respects, as my subsequent quotations will show.

Lastly, mention must be made of the large atlas of photographic views of Mexican and Yucatec ruins, taken by M. Désiré Charnay, who visited the western continent in 1857, charged by the French authorities with a mission to explore the ruins of America. His atlas is accompanied by an octavo volume, entitled " Cités et Ruines Américaines; Mitla, Palenqué, Izamal, Chichen-Itza, Uxmal. Recueillies et photographiées par Désiré Charnay. Avec un Texte par M. Viollet-le-Duc; suivi du Voyage et des Documents de l'Auteur." Paris, 1863. Among the four photographs obtained by him at Palenque that of the middle tablet of the Group of the Cross is of particular interest in connection with the subject treated in these pages, and will be duly considered hereafter.

* Brasseur de Bourbourg in: Archives de la Commission Scientifique du Mexique; Paris, 1865, tom. i, p. 91.

CHAPTER III.

THE TEMPLE OF THE CROSS.

THOUGH anything like a description of Palenque would be incompatible with the character of this monograph, and, moreover, appear totally superfluous in view of the existing ample literature on the subject, I consider it as a part of my task to extract from the authorities enumerated in the preceding chapter such statements as relate to the Temple of the Cross and to the celebrated sculpture itself. I also give, as Fig. 1, a plan of Palenque, in order to illustrate the situation of the different buildings, all of which, as will be seen, face the cardinal points. The Temple of the Cross, indicated by No. 4 on the plan, is situated about one hundred and fifty yards east of the large building No. 1, commonly called the Palace, on the opposite bank of the small river Otolum,* which traverses the site of the ruins. It stands upon a dilapidated pyramidal stone structure measuring about one hundred and thirty-four feet on the slope, and forms a rectangle, fifty feet long and thirty-one feet wide.† Figures 2, 3 and 4 illustrate the character of the building.

I now insert Del Rio's somewhat vague account of the temple :—

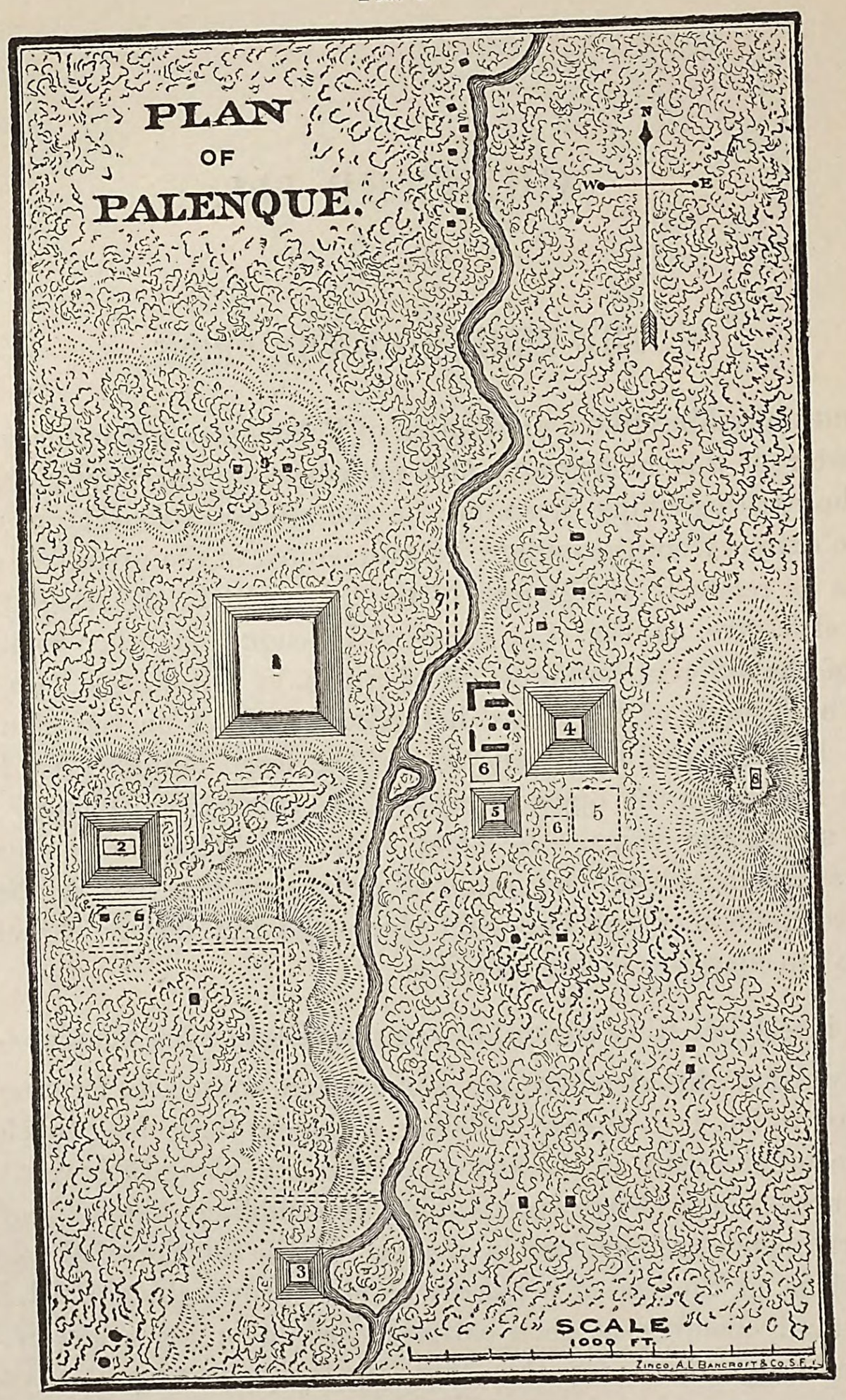
"Eastward of this structure‡ are three small eminences forming a triangle, upon each of which is a square building, eighteen yards long by eleven broad, of the same architecture as the former, but having, along their roofings, several superstructures, about three yards high, resembling turrets, covered with different ornaments and devices in stucco. In the interior of the first of these three mansions, at the end of a gallery almost entirely dilapidated, is a saloon having a small chamber at each extremity, while in the centre of the saloon stands an oratory, rather more than three yards square, presenting on each side of the entrance a perpendicular stone, whereon is pourtrayed the image of a man

* So called by Del Rio, but "Otula" by Stephens. According to Brasseur, Otolum means "Place of crumbling stones," and the name is applied to the ruins as well as to the stream. The people of the neighborhood call the ruins "Casas de Piedra" (stone houses).

† Stephens's measurements.

‡ He alludes to one of the temples south of the Palace.

FIG. 1.



PLAN OF PALENQUE.

(After Waldeck).

1. Palace.
2. Temple of the Three Tablets.
3. Temple of the "Beau Relief."
4. Temple of the Cross.
5. Temple of the Sun.
6. Ruined Pyramidal Structure.
7. Aqueduct.
8. Ruined Building.
9. Ruined Buildings.

(The edifices marked 5 and 6 are placed by Stephens south of the Temple of the Cross, as indicated by the dotted lines. Some of the structures here specified are not mentioned in this publication.)

in bas-relief.* Upon entering, I found the entire front† of the oratory occupied by three stones joined together, on which the objects described in Fig. 26‡ are allegorically represented. The outward decoration is confined to a sort of moulding finished with small stucco bricks, on which are bas-reliefs . . . ; the pavement of the oratory is quite smooth, and eight inches thick, which it was necessary to perforate in order to make an excavation. Having proceeded in this labor, at about half a yard deep, I found a small round earthen vessel, about one foot in diameter, fitted horizontally with a mixture of lime to another of the same quality and dimensions; these were removed, and the digging being continued, a quarter of a yard beneath, we discovered a circular stone, of rather larger diameter than the first articles, and on removing this from its position, a cylindrical cavity presented itself, about a foot wide and the third of a foot deep, containing a flint lance, two small conical pyramids with the figure of a heart in dark crystallized stone (which is very common in this kingdom and known by the name of challa); there were also two small earthen jars or ewers with covers containing small stones and a ball of vermilion . . . The situation of the subterranean depository coincides with the centre of the oratory, and in each of the inner angles, near the entrance, is a cavity like the one before described, where two little jars were also buried. It is unnecessary to dilate on the subjects represented by the bas-reliefs on the three stones, or on the situation of the articles found in this place; they convey to the mind an idea that it was in this spot they venerated, as sacred objects, the remains of their greatest heroes, to whom they erected trophies recording the particular distinctions they had merited from their country, by their services or the victories obtained over its enemies, while the inscriptions on the tablets were intended to eternize their names; for to this object the bas-reliefs as well as the characters surrounding them evidently refer."§

Such is Del Rio's meagre allusion to the interesting sculpture. He was certainly not as well prepared for the task of describing antiquities as his successor, Dupaix, from whose report I translate, in accordance with my adopted plan, the following account of the temple:—

"This number represents an oratory or temple, which we will call the Temple of the Cross, on account of the remarkable object it encloses. In dimensions it is equal to that just described; but it has only one story. It is situated

* These are the tablets immured in a house of the village of Santo Domingo. Mr. Stephens erroneously figures them as ornamenting the entrance to the oratory in the so-called Temple of the Sun (No. 5 on the plan). The statements of Dupaix and Galindo, as will be seen, remove every doubt.

† He should have said "back."

‡ The plates in the English translation of Del Rio's report, as before stated, are not numbered.

§ Del Rio: Description etc., p. 17.

on a hill, the ascent to which is difficult. The front is also turned toward the north ;* but it is distinguished from the former by its interior ornaments. This temple contains a peculiar symbol in the form of a cross of very complicated construction, placed on a kind of pedestal. Four human figures, two on each side, contemplate this object with veneration. The figures nearest to the cross are dressed in costumes differing from those we have thus far seen ; they appear more dignified and deserve our special attention. One of these personages, taller than the others, offers with uplifted arms a new-born child of fantastic shape ; the second person is portrayed in an attitude of admiration. The two others are placed behind the former. One represents an aged man, who holds in his raised hands a kind of wind-instrument, the end of which he has placed in his mouth, as in the act of blowing it. The tube is straight, consisting of several pieces united by rings, and from its lower extremity proceed three leaves, or rather feathers, since these people had a marked predilection for such ornaments. The last figure represents a grave and majestic man, lost in astonishment at what he contemplates. The costumes and ornaments of this great bas-relief are too complicated for description, being, indeed, the accomplishment of all that the exalted imagination of the artist or inventor could conceive and produce. Only a drawing, or the bas-relief itself, can give an adequate idea of such a work. The ornaments surround the figures on all sides, yet without hiding them. Innumerable hieroglyphs accompany this mysterious representation : they are not only placed near the cross, which is the principal object, but also around the lateral figures, and they are, moreover, carved on slabs of a kind of fine-grained, dark-yellow marble, and arranged in horizontal rows. Imagine our surprise on suddenly beholding this cross ! Yet, upon close and unbiased examination, one sees that it is not the holy Latin cross, which we adore, but rather the Greek cross, disfigured by extraordinary ornaments ; for the former consists of a vertical line divided into unequal parts by a shorter horizontal line, forming, with the other, four right angles. The Greek cross is also composed of two straight lines, the one vertical and the other horizontal ; but the latter divides the former into two equal parts, four right angles being likewise formed at the point of intersection. Moreover, the complicated and fantastic ornaments here exhibited are in contrast with the venerable simplicity of the true cross and its sublime significance. We must therefore refer this allegorical composition to the religion of this ancient people, a subject concerning which we have nothing to say, being totally ignorant of its ceremonies.

" How great would be our satisfaction, if it were in our power to give a true interpretation of these bas-reliefs as well as of the hieroglyphs, which are still more unfathomable ! It appears that these nations employed two methods for

* The building faces the south.

expressing their ideas, using in one case letters or alphabetical signs, in the other mysterious symbols. The characters were disposed in horizontal and vertical rows, forming right, but never acute, angles. This is all that I was able to notice. I will add, however, that in both kinds of rows the same figures are sometimes repeated, and also that the human heads, which frequently occur, are always shown in profile and turned to the left. The characters, it thus appears, were, like the Hebrew, written and read from right to left."*

Reserving my comments on Dupaix's incorrect representation of the tablet, I will now give a translation of Galindo's observations on the temple and its sanctuary:—

"Another building consecrated to religious purposes stands east of the Palace on a hill still higher than those supporting the structures before described. The building in question consists of two galleries, the front one of which occupies its whole length, while the second is divided into three rooms. The eastern one looks like a dungeon, but its small entrance shows no indication of a door. The western room is a simple apartment; the middle one has no door; but as there are supporters (*piliers*) in the wall, I suppose that it was closed with curtains. This room encloses a small chapel provided with a flat roof. Its front is formed by two slabs of yellow stone, with a wide entrance between them. On the western stone is represented a man facing the door. His head is ornamented with feathers and twigs, one of them supporting a small crane with a fish in its beak. He is clothed with a tippet and with pantaloons reaching to the middle of the leg, the lower part of which is encircled with bands; and a kind of boot without sole covers only the hind part of the foot. A little human figure of horrible appearance, sitting with its back turned toward the standing person, has no feet, but terminates in a tail. On the same slab are seen eleven inscribed tablets, two and a half square inches in size, above and in front of the standing human figure. The other stone slab shows an ugly old man, with something like a branch or a pipe in his mouth. Opposite these figures there are projections in the wall, at the upper part as well as at the lower, probably designed for attaching victims or criminals. Within, on the back part of the chapel, are represented among ornamental work (*parmi du filigrane*) two human figures, about three feet high, the tallest of which places the head of a man upon the top of a cross, shaped exactly like that of the Christians; the other figure is apparently that of a child. Both have their eyes fixed upon the offered head. Behind the two figures are small tablets exhibiting well-worked characters. I may be wrong in supposing that human sacrifices were made in this chapel; for such, it is believed, were performed within sight of large assemblies of people, while in this place a

* Antiquités Mexicaines: Troisième Expédition du Capitaine Dupaix; tom. i, p. 26.

few persons only could have witnessed them. It may have been a dais under which magistrates administering justice took their seats. Above all these rooms are raised two parallel narrow walls, reaching to a height of eighty feet above the ground. They are pierced with square apertures, and by means of projecting stones one can reach the upper part, from which a most extended view over the plains toward the north is presented.

"The physiognomies of the human figures in alto-relievo indicate that they represent a race not differing from the modern Indians; they were, perhaps, taller than the latter, who are of a middle or rather small stature, compared with Europeans. There are also found among the ruins stones for grinding maize, shaped exactly like those employed to-day by the Central American and Mexican Indians. They consist of a stone slab with three feet, all made from one piece, and a stout stone roller, with which the women crush the maize on the slab.

"Though the Maya language is not spoken in all its purity in this neighborhood, I am of opinion that it was derived from the ancient people that left these ruins, and that it is one of the original languages of America. It is still used by most of the Indians, and even by the other inhabitants, of the eastern part of Tabasco, of Peten, and Yucatan. Books are printed in Maya, and the clergy preach and confess the Indians in the same language."*

Having duly noticed in the preceding pages the earlier accounts of the Temple of the Cross, I will now present, in a cumulative form, the statements of Stephens and Charnay relating to the same subject, with such additional information as may be derived from Waldeck's designs and his scanty explanations.

The pyramidal structure bearing the temple stands, according to Stephens, on a broken stone terrace, about sixty feet on the slope, with a level esplanade at the top, one hundred and ten feet in breadth. The pyramid itself, now ruined and overgrown with trees, is one hundred and thirty-four feet high on the slope, as stated on a preceding page.† Charnay places the Temple of the Cross at about three hundred metres to the right of the Palace. He alludes to the height of the pyramid, without giving the measurement, and complains of the difficulties encountered in its ascent: "The stones with which the pyramid was cased give way under the feet; creeping plants impede the progress, and the trees are sometimes so close together as to bar the passage. It is difficult to account for the mode of construction of these stupendous works, and the question arises whether the builders did not avail themselves of the natural eminences so common in America, modifying them according to their designs, either by raising or

* Galindo's letter to the Geographical Society of Paris (April 27, 1831), in: Antiquités Mexicaines, Notes et Documents Divers; tom. i, p. 74.

† Stephens: Central America, etc., vol ii, p. 344.

by truncating them, after which they encased the exterior of the mounds with stone."*

Waldeck gives on Plate XX of the "Monuments Anciens" an excellent view of the pyramid and the temple crowning its summit, taken from the main entrance of the Palace. The view shows the steep ascent to the pyramid, overgrown with trees and shrubbery, and near its base the simple dwelling inhabited by Waldeck during his sojourn among the ruins. I introduce as Fig. 3, on the following page, a copy of the temple, taken from this plate.

The horizontal dimensions of the temple already have been given—fifty feet front, thirty-one feet depth. Fig. 2 represents (as restored) the front elevation of the building, showing its three entrances, and Fig. 4 the ground plan, both taken from Stephens. "The whole front was covered with stuccoed ornaments. The two outer piers contain hieroglyphics; one of the inner piers is fallen, and the other is ornamented with a figure in bas-relief, but faded and ruined."† The interior of the building has been described to some extent, and the ground plan shows its division into two corridors, running lengthwise, the back one of which is divided into three rooms, that in the middle containing an oblong enclosure with a wide entrance facing the principal doorway of the building. The enclosure was surrounded with a heavy cornice or moulding of stucco, and above the doorway were rich ornaments, now much defaced; on each of the outer sides of the doorway was a tablet of sculptured stone, both of which, however, have been removed.‡ I shall have occasion to allude again to these tablets, which were still seen in place by the early explorers. According to Stephens, the enclosure measures, within, thirteen feet in length and seven in depth. Galindo states expressly that the sanctuary, called by him a chapel, was covered with a flat roof,§ a circumstance not mentioned by Stephens, but again alluded to by Charnay. Against the back of the enclosure, and covering it almost entirely, were fixed the three tablets forming the Bas-relief of the Cross. No light was admitted, excepting that entering through the door. Stephens found the floor of the building covered with large stones, and noticed the breaches and excavations underneath, which Captain Del Rio had caused to be made.

Speaking of the sanctuary, M. Charnay observes as follows: "This altar, which recalls by its form the ark of the Hebrews, is a kind of covered box (*une espèce de caisse couverte*), having for an ornament a small frieze with mouldings. At both extremities of this frieze, high above, are displayed two wings, reminding one of the same kind of ornamentation often seen on the frontons of

---

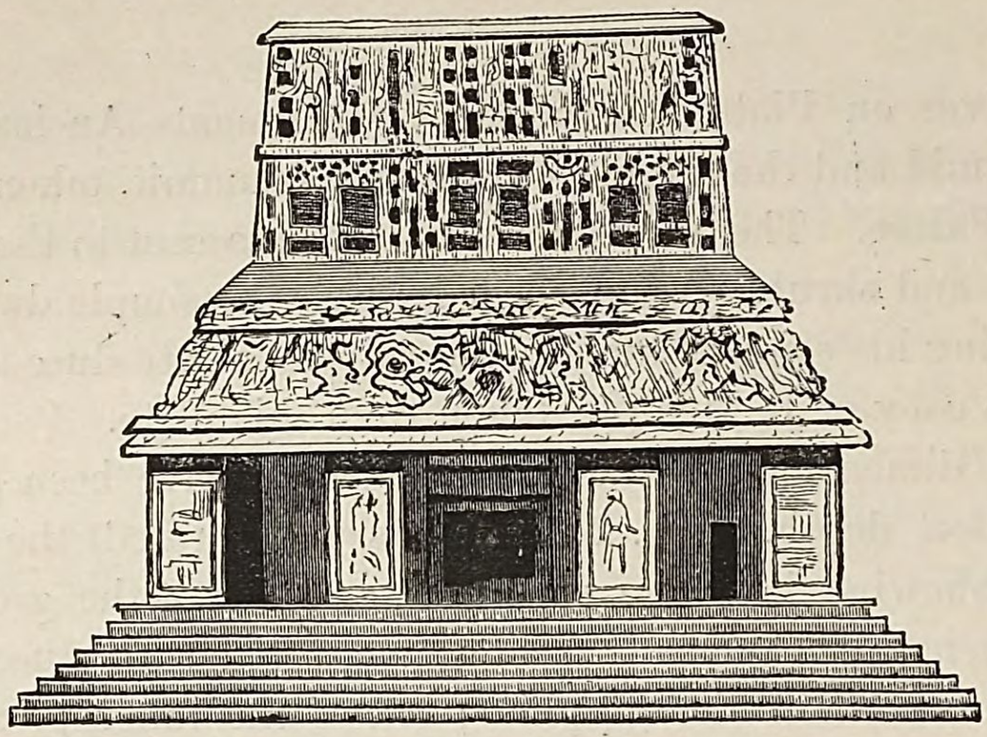
* Charnay: Cités et Ruines etc., p. 417.

† Stephens: Central America, etc., vol. ii, p. 344.

‡ Ibid., p. 345.

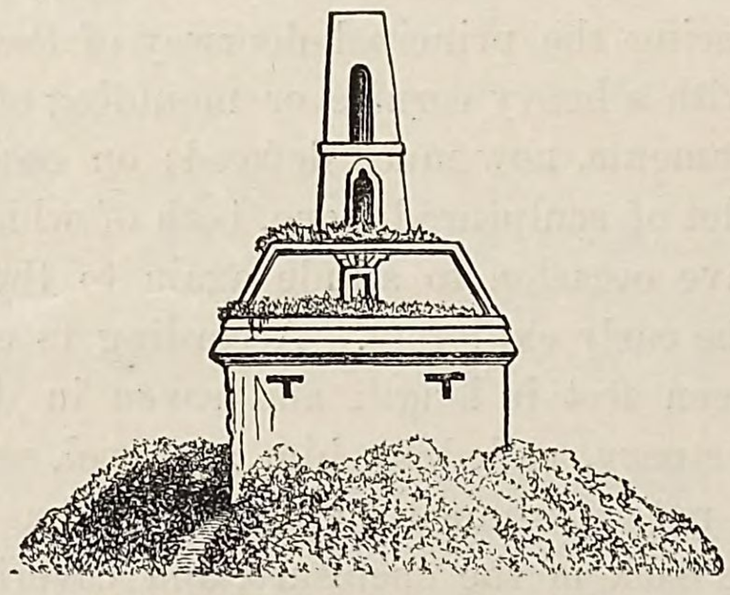
§ See p. 19 of this publication.

FIG. 2.



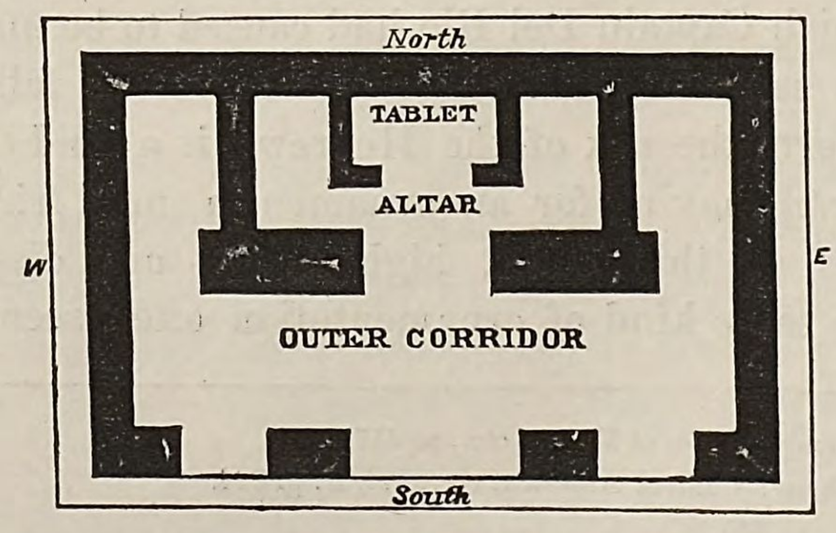
TEMPLE OF THE CROSS.—FRONT ELEVATION.
(After Stephens).

FIG. 3.



TEMPLE OF THE CROSS.—SIDE VIEW.
(After Waldeck).

FIG. 4.



TEMPLE OF THE CROSS.—GROUND PLAN.
(After Stephens).

Egyptian monuments.* On each side of its entrance are ornaments in stucco, and sometimes in stone, representing different personages, and in the background of the altar is seen, half shrouded in darkness, a large panel, composed of three immense slabs, closely joined and covered with precious sculptures." †

It is evident that M. Charnay hereby merely wishes to convey the idea that the slabs formerly constituted a complete panel, but not that they are still united. This is proved by his own statements which will be given at the proper place. A real mistake, however, though a very pardonable one, seems to be implied in the following passages:

"From the left room descends a staircase into an under-ground passage, leading exactly under the altar which we have described. It is probable that the priest hidden in this vault, of which the faithful had no knowledge, pronounced oracles with a loud voice, which the inquirer took for the voice of his gods. Thus, since the days of creation, the same means have been employed." ‡

What M. Charnay here considers as the work of the aboriginal builders is probably the excavation made by Del Rio and noticed by Stephens. Del Rio himself states "that the situation of the subterranean depository coincided with the centre of the oratory."§

The temple measures about forty feet in height, including, of course, the roof and its curious superstructure. The accompanying cuts representing the front elevation (Fig. 2) and the side view (Fig. 3) will give an idea of its external appearance. The roof shows two slopes, the lower one of which "was richly ornamented with stucco figures, plants, and flowers, but mostly ruined. Among them were the fragments of a beautiful head and of two bodies, in justness of proportion and symmetry approaching the Greek models. On the top of this roof is a narrow platform, supporting what, for the sake of description, I

---

* Neither Stephens nor any of the other explorers mentions these ornaments, which are, however, conspicuously exhibited over the entrance to the sanctuary in the Temple of the Sun, as shown on the plate facing page 354 in the second volume of Stephens's "Central America." It thus appears probable that M. Charnay attributed by mistake the wing-ornaments to the Temple of the Cross.

The Temple of the Sun (marked No. 5 on the accompanying plan of Palenque) stands on a pyramidal structure near that supporting the Temple of the Cross, and bears much resemblance to the latter, in external structure as well as in its interior arrangement. Fixed in the rear wall of its sanctuary are three stone slabs exhibiting a bas-relief very similar in detail to that of the cross. Mr. Stephens figures the former in the frontispiece of the above-mentioned volume. The two principal personages, probably the same who are represented on the Tablet of the Cross, offer children to a central figure in the shape of a large hideous mask with portruding tongue. This figure has been supposed to be an image of the sun, and hence the temple acquired its appellation. Stephens describes the tablet in question as "the most perfect and most interesting monument in Palenque. . . The sculpture is perfect, and the characters and figures stand clear and distinct on the stone. On each side are rows of hieroglyphics."

† Charnay: Cités et Ruines etc., p. 418

‡ Ibid., p. 419.

§ See p. 17 of this publication

shall call two stories. The platform is but two feet ten inches wide, and the superstructure of the first story is seven feet five inches in height; that of the second eight feet five inches, the width of the two being the same. The ascent from one to the other is by square projecting stones, and the covering of the upper story is of flat stones laid across and projecting over. The long sides of this narrow structure are of open stucco work, formed into curious and indescribable devices, human figures with legs and arms spreading, and apertures between; and the whole was once loaded with rich and elegant ornaments in stucco relief. Its appearance at a distance must have been that of a high, fanciful lattice. Altogether, like the rest of the architecture and ornaments, it was perfectly unique, different from the works of any other people with which we were familiar, and its uses and purposes entirely incomprehensible. Perhaps it was intended as an observatory. From the upper gallery, through openings in the trees growing around, we looked out over an immense forest, and saw the Lake of Terminos and the Gulf of Mexico." * Mr. Bancroft thinks "the superstructure would seem to have been added to the temple solely to give it a more imposing appearance. It could hardly have served as an observatory, since there are no facilities for mounting to the summit." †

There is a marked discrepancy between Stephens's description of the temple, including his design of the front elevation (Fig. 2), and Waldeck's side view of the same building (Fig. 3). In the latter the roof is of different shape, and its platform appears much wider than two feet ten inches, which is the measurement given by Stephens; and the superstructure, instead of consisting of parallel walls, shows a tapering form. Its two stories are indicated in this sketch by windows, and the wall of the building is pierced with two T-shaped apertures, of which Stephens makes no mention. Of course, it is at present impossible to decide which of the explorers is right, there being no appeal to a later authority.

Speaking of the chief ornament of the temple—the Tablet of the Cross—Mr. Stephens observes: "The principal subject of this tablet is the cross. It is surmounted by a strange bird, and loaded with indescribable ornaments. The two figures are evidently those of important personages. They are well drawn, and in symmetry of proportion are perhaps equal to many that are carved on the walls of the ruined temples in Egypt. Their costume is in a style different from any heretofore given, and the folds would seem to indicate that they were of a soft and pliable texture, like cotton. Both are looking toward the cross, and one seems in the act of making an offering, perhaps of a child; all speculations on the subject are of course entitled to little regard, but perhaps it would not be wrong to

* Stephens: Central America, etc., vol. ii, p. 347.

† Bancroft: Native Races etc., vol. iv, p. 331.—In the "Antiquités Mexicaines" the temple is figured without any superstructure (Troisième Expédition, planche xxxv).

ascribe to these personages a sacerdotal character. The hieroglyphics doubtless explain all. Near them are other hieroglyphics, which reminded us of the Egyptian mode for recording the name, history, office, or character of the persons represented. This Tablet of the Cross has given rise to more learned speculations than perhaps any others found at Palenque. Dupaix and his commentators, assuming for the building a very remote antiquity, or, at least, a period long antecedent to the Christian era, account for the appearance of the cross by the argument that it was known and had a symbolical meaning among ancient nations long before it was established as the emblem of the Christian faith. . . . . There is reason to believe that this particular building was intended as a temple, and that the enclosed inner chamber was an adoratorio, or oratory, or altar. What the rites and ceremonies of worship may have been, no one can undertake to say."*

M. Morelet, as before stated, abstains from a description of the Palenquean ruins, directing the reader's attention to former explorations. He devotes, however, a passing remark to the tablet: "The bas-relief, known as the Stone of the Cross, deserves mention as one of the most meritorious. Torn by profane hands from the sanctuary which sheltered it, and left at the foot of a hill where it is gradually becoming destroyed—the enigma of this historical fragment has long occupied the attention of savants. They have fancied they could distinguish among the objects it represents the symbols of the worship of Memphis, and then again those of the Christian religion. But I think it will be well to await the coming of a second Champollion to furnish us with the key to American hieroglyphics; and, until then, to see in this stone only an Indian allegory, of which the leading representations were suggested by the products of the country."†

There can be no doubt that Dupaix still saw, in 1808, the three tablets in their proper place, fixed against the rear wall of the Sanctuary of the Cross. The evidence lies in the fact that he represents, though in a manner far from accurate, the whole bas-relief, including portions sculptured on the slab which is now preserved in the United States National Museum. A comparison of the illustrations, which I shall introduce hereafter, will remove every doubt. In 1832, however, M. Waldeck found the middle slab torn from its place, and he relates the circumstance in these words: "This is the portion of the beautiful work which I have saved from a voyage to the United States, whither it was to be transferred. Not without much labor this heavy stone had been transported to the river which flows through the ruins, and there I confiscated it by order of the governor of Chiapas; there I also drew it. Ten years later, Stephens and

* Stephens: Central America, etc., vol. ii, p. 346.

† Morelet: Travels etc., p. 98.

Catherwood found it in the same place. In 1832 there remained (in the temple) only the stones forming the left and right sides of the relief, and in 1842* Stephens found only that constituting the left side."† If, indeed, M. Waldeck saw, in 1832, the right slab in its proper place—which I doubt, ascribing his statement to a misconception on his part—it is really surprising that he neglected to draw it, conscious as he was of the important character of the sculpture. His large and well-executed double plate‡ shows only the middle slab and that joining it on the left.

Stephens and Catherwood, in fact, found the middle stone in the same place where Waldeck had drawn it; but Stephens as well as Charnay ascribe its removal from the sanctuary to a different agency. "That on the left," says Mr. Stephens, "is still in its place. The middle one has been removed and carried down the side of the structure, and lies now near the bank of the stream. It was removed many years ago by one of the inhabitants of the village, with the intention of carrying it to his house; but, after great labor, with no other instruments than the arms and hands of Indians, and poles cut from trees, it had advanced so far, when its removal was arrested by an order from the government forbidding any farther abstraction from the ruins. We found it lying on its back near the banks of the stream, washed by many floods of the rainy season, and covered with a thick coat of dirt and moss. We had it scrubbed and propped up, and probably the next traveler will find it with the same props under it, which we placed there. In the engraving it is given in its original position on the wall. *The stone on the right is broken, and, unfortunately, altogether destroyed; most of the fragments have disappeared; but, from the few we found among the ruins in the front of the building, there is no doubt that it contained ranges of hieroglyphics corresponding in general appearance with those of the stone on the left.*"§

The right slab, we thus learn, was, though in a fragmentary state, still at Palenque in 1840, when Mr. Stephens explored the ruins. He might have collected and united the pieces, and drawn them; but the shortness of his sojourn doubtless prevented him from hunting for fragments, while there were so many other objects of more prominent interest to be illustrated by pen and pencil. The slab in question, I imagine, was broken in the process of removing the central piece, which, indeed, hardly could have been detached without the preliminary displacement of one of the lateral tablets. The fragments, as we have seen, were brought to the United States not long after Stephens's exploration of Palenque.

---

* Should be 1840.

† Waldeck: Description des Ruines etc., p. VII, in: Monuments Anciens etc.

‡ xxi and xxii in: Monuments Anciens etc.

§ Stephens: Central America, etc.; vol. ii, p. 345.

It has been mentioned that M. Charnay's atlas contains only four photographs from Palenque, one of which represents the central piece of the Group of the Cross. He found the slab, probably not, as Mr. Stephens anticipated, with the props still under it, but doubtless on the same spot where the American explorer had caused it to be drawn. "Torn from its original place," says Charnay, "by a fanatic who saw in it a reproduction of the Christian emblem, miraculously employed by the ancient inhabitants of these palaces, it was designed to ornament the house of a rich widow in the village of Palenque; but the authorities were aroused by this devastation, and prohibited the removal of the stone: it was consequently left in the wood, where I unconsciously trod on it, until my guide directed my attention to this precious piece. It was covered with moss, and the sculptures had become totally invisible. When I afterward concluded to reproduce it, it had to be rubbed with brushes, washed, and set against a tree.

"The bas-relief represents a cross, surmounted by a bird of fantastic shape, to which a standing person, of perfectly pure design, offers a child extended on his arms; an inscription composed of five characters is seen near the head of the figure; four other characters of the same kind are placed near the lower sides of the cross. A hideous face of an idol forms the base of this monument. The two other slabs, *to-day in place in the sanctuary of the temple*, contain: that on the left, a personage in an upright attitude, apparently in expectation of the sacrifice to be performed. Behind the bas-relief extends a long inscription. *The right slab is likewise covered with characters, which doubtless reveal the significance of the cross and the history of the temple or its founders.*" *

The passages here printed in italics undoubtedly convey a mistake on the part of M. Charnay, who could not have seen at Paleque an object which was no longer there, having been removed to another country more than fifteen years before his visit. Far from accusing that gentleman of any intentional inaccuracy, I fully believe that he labored under an erroneous impression.†

It will be remembered that Del Rio, Dupaix and Galindo mention among the sculptures existing at their time in the Temple of the Cross, two stone tablets, each showing a human figure in bas-relief. The accounts of Dupaix and Galindo, in particular, leave no doubt that these tablets once stood at the

---

* Charnay: Cités et Ruines etc., p. 418.

† M. Charnay writes well, and with the evident intention to represent matters in their true light, as every one will admit who has read the account of his travels, which forms by far the greater portion of the "Cités et Ruines Américaines." A man of his character would not purposely propagate an untruth. He simply made a mistake, probably caused by supposing he had seen in the Sanctuary of the Cross what he saw elsewhere among the ruins of Palenque. Perhaps Dr. Samuel Johnson's observation is applicable to this case: "How seldom descriptions correspond with realities; and the reason is that people do not write them till some time after, and then their imagination has added circumstances." (Boswell).

sides of the doorway leading into the Sanctuary of the Cross.* Stephens figures them on the two plates inserted between pages 352 and 353 in Vol. II of his work on Central America, and again, on a smaller scale, as ornamenting the outside of the piers forming the entrance to the oratory in the Temple of the Sun. He could not have made this mistake, if he had read Dupaix's and Galindo's statements concerning these tablets.

"The two figures," he says, "stand facing each other, the first on the right hand, fronting the spectator. The nose and eyes are strongly marked, but altogether the development is not so strange as to indicate a race entirely different from those which are known. The head-dress is curious and complicated, consisting principally of leaves of plants, with a large flower hanging down; and among the ornaments are distinguished the beak and eyes of a bird, and a tortoise. The cloak is a leopard's skin, and the figure has ruffles around the wrists and ankles.

"The second figure, standing on the left of the spectator, has the same profile which characterizes all the others at Palenque. Its head-dress is composed of a plume of feathers, in which is a bird holding a fish in its mouth; and in different parts of the head-dress there are three other fishes. The figure wears a richly embroidered tippet, and a broad girdle, with the head of some animal in front, sandals, and leggins: the right hand is extended in a prayerful or deprecating position, with the palm outward. Over the heads of these mysterious personages are three† cabalistic hieroglyphics."‡

These two tablets were also drawn by Waldeck,§ who is certainly right in stating that they had belonged to the Temple of the Cross. They had been removed before his visit from their places, and imbedded in the wall of the sala in the house belonging to the deputy Bravo, in the village of Santo Domingo. "They are probably still there," he adds, "for no one could obtain them, unless by marrying one of the sisters of the deputy."‖ Mr. Stephens found the house in possession of two unmarried ladies who set a high value on the tablets, and hardly would allow Mr. Catherwood to draw them. Stephens intended to buy them and carry them home "as a sample of Palenque." But they could only be purchased with the house, a condition to which he was willing to submit. There were, however, difficulties in the way which frustrated his plan.¶ Charnay saw

---

* See pp. 18 and 19 of this publication.

† His engravings show four.

‡ Stephens: Central America, etc.; vol. ii, p. 353.

§ Plates xxiii and xxiv in: Monuments Anciens etc. Less correct representations of these tablets are found in the reports of Del Rio and Dupaix.

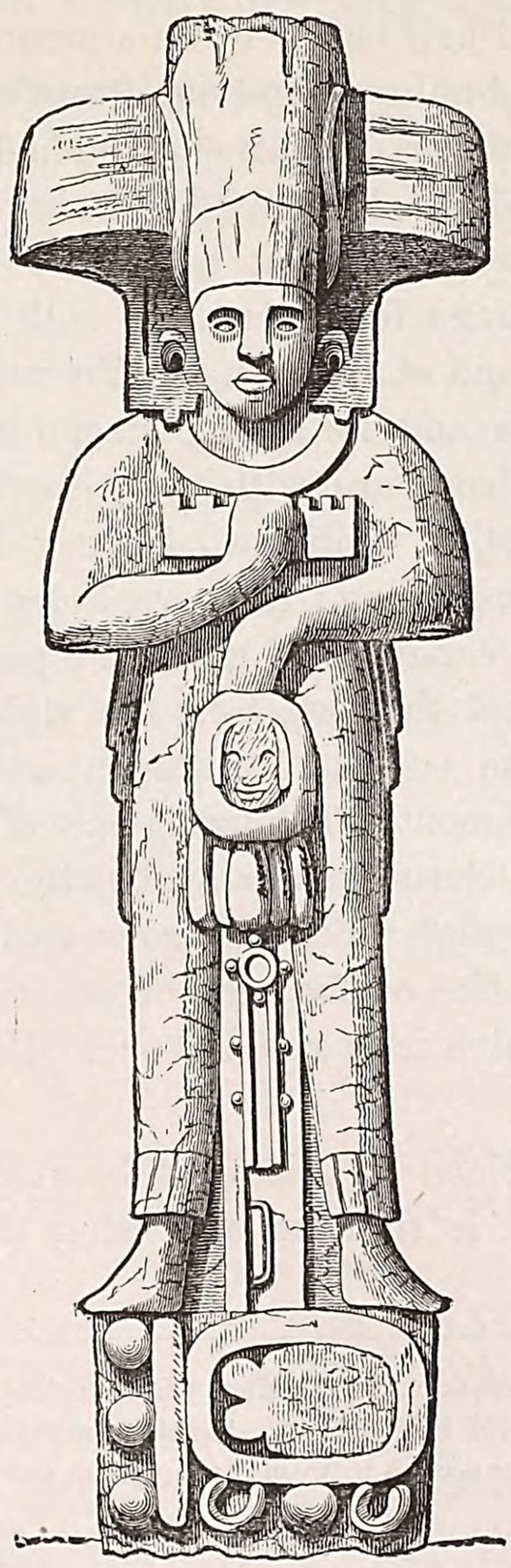
‖ Waldeck: Description des Ruines de Palenqué, p. VII in: Monuments Anciens etc.

¶ Stephens: Central America, etc.; vol. ii, p. 353.

them, many years afterward, in the same house, and takes occasion to observe that the engravings of these bas-reliefs in Stephens's work are very correct.*

In order to render my account of the Temple of the Cross complete, I must mention two stone statues, perfectly alike, which were discovered by Waldeck on the southern slope of the pyramid, and thought by him to have served for supporting a platform extending before the middle door of the temple. This platform, he states, was twenty feet long and ten feet wide. One of the statues

FIG. 5.



STATUE BELONGING TO THE TEMPLE OF THE CROSS.
(After Stephens).

was broken across the legs, the other entire. He drew the latter,† and then

* Charnay: Cités et Ruines etc., p. 413.
† Plate xxv in: Monuments Anciens etc.

turned both face downward, in order to prevent their detection by speculators in the village of Santo Domingo.* The best-preserved of the statues, however, did not escape the searching eye of Mr. Stephens, who represents it on the plate facing page 349 of his often-quoted volume. His design is reproduced as Fig. 5, on the preceding page. It seems he had no knowledge of the existence of a second statue. The one he saw is thus described :—

"It lies in front of the building, about forty or fifty feet down the side of the pyramidal structure. When we first passed it with our guide, it lay on its face, with its head downward, and half buried by an accumulation of earth and stones. The outer side was rough and unhewn, and our attention was attracted by its size; our guide said it was not sculptured; but, after he had shown us everything that he had knowledge of, and we had discharged him, in passing it again we stopped and dug around it, and discovered that the under surface was carved. The Indians cut down some saplings for levers, and rolled it over. It is the only statue that ever has been found at Palenque. We were at once struck with its expression of serene repose and its strong resemblance to Egyptian statues, though in size it does not compare with the gigantic remains of Egypt. In height it is ten feet six inches, of which two feet six inches were under ground. The head-dress is lofty and spreading; there are holes in the place of ears, which were perhaps adorned with ear-rings of gold and pearls. Round the neck is a necklace, and pressed against the breast by the right hand is an instrument, apparently with teeth. The left hand rests on a hieroglyphic, from which descends some symbolic ornament. The lower part of the dress bears an unfortunate resemblance to the modern pantaloons, but the figure stands on what we have always considered a hieroglyphic, analogous again to the custom in Egypt of recording the name and office of the hero or other person represented. The sides are rounded, and the back is of rough stone. Probably it stood imbedded in a wall."†

Stephens doubtless inclined to this view, because he saw only one of the statues; Waldeck, it seems, is right in supposing that they served in lieu of atlantes.

---

* Waldeck: Description des Ruines etc., p. VII in: Monuments Anciens etc.

† Stephens: Central America etc.; vol. ii, p. 348.—It should be mentioned that Stephens, notwithstanding the above allusions, totally denies any connection between the Egyptians and the builders of the ruins he describes.

CHAPTER IV.

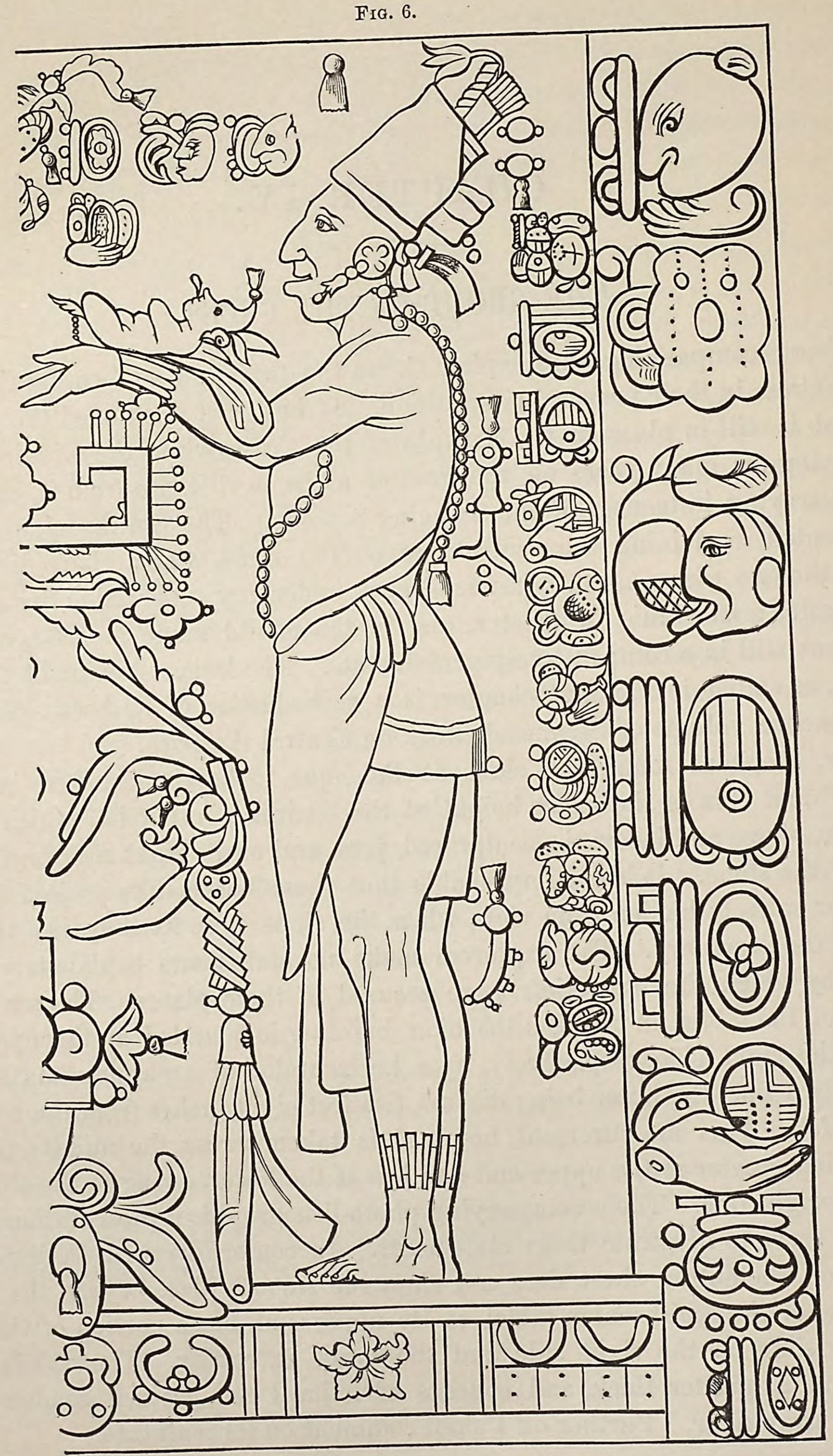
THE GROUP OF THE CROSS.

THE accompanying outline plate shows the three tablets forming the Group of the Cross in their proper juxtaposition. It has been mentioned that only the left slab is still in place in the Temple of the Cross, while the middle slab has been lying for many years on the ground at some distance from it, exposed to the destroying influences of the changing seasons. The Smithsonian tablet is represented as joining the central one on the right, and a sharp line shows where the two pieces meet. It was drawn, under my supervision, by a skillful artist, after a fac-simile in plaster, cast in the mould made in 1863, when the stone was still in a comparatively perfect state. The larger portion of the illustration, as stated in the first chapter, is a reproduction of Catherwood's design in the second volume of Stephens's work on Central America.

Mr. Stephens found the slabs at Palenque to be six feet four inches in height,* and this is the exact height of the Smithsonian tablet, which shows, however, above and below the sculptured part and on its right side smooth portions of the stone. It is not improbable that these border-like projections were partly or entirely hidden from view, when the slabs were fixed against the back wall of the sanctuary. The explorers make no statements explanatory of the means by which the bas-reliefs were secured in their places. The sculptured surface of the tablet in the Smithsonian building is bounded at the upper end and on the right side, respectively, by a horizontal, and an approximately vertical incised line, the latter being distant two feet eight inches from the left edge of the slab. This measurement, however, is taken across the middle, the distance being greater at the upper end and less at the lower, owing to the obliquity of the upright line. The accompanying photo-lithographic representation of the slab will serve to illustrate these statements. In conformity with Catherwood's delineation, the outline sheet does not show the smooth place beyond the sculptured part of the Smithsonian tablet at its upper end, but a portion of the bare stone is visible on the right side and the lower extremity. The slab is three inches and a quarter thick, and consists of a hard fine-grained sandstone of yellowish-gray color. Further on I shall comment on its sculpture.

* Stephens: Central America, etc.; vol. ii, p. 345.

FIG. 6.

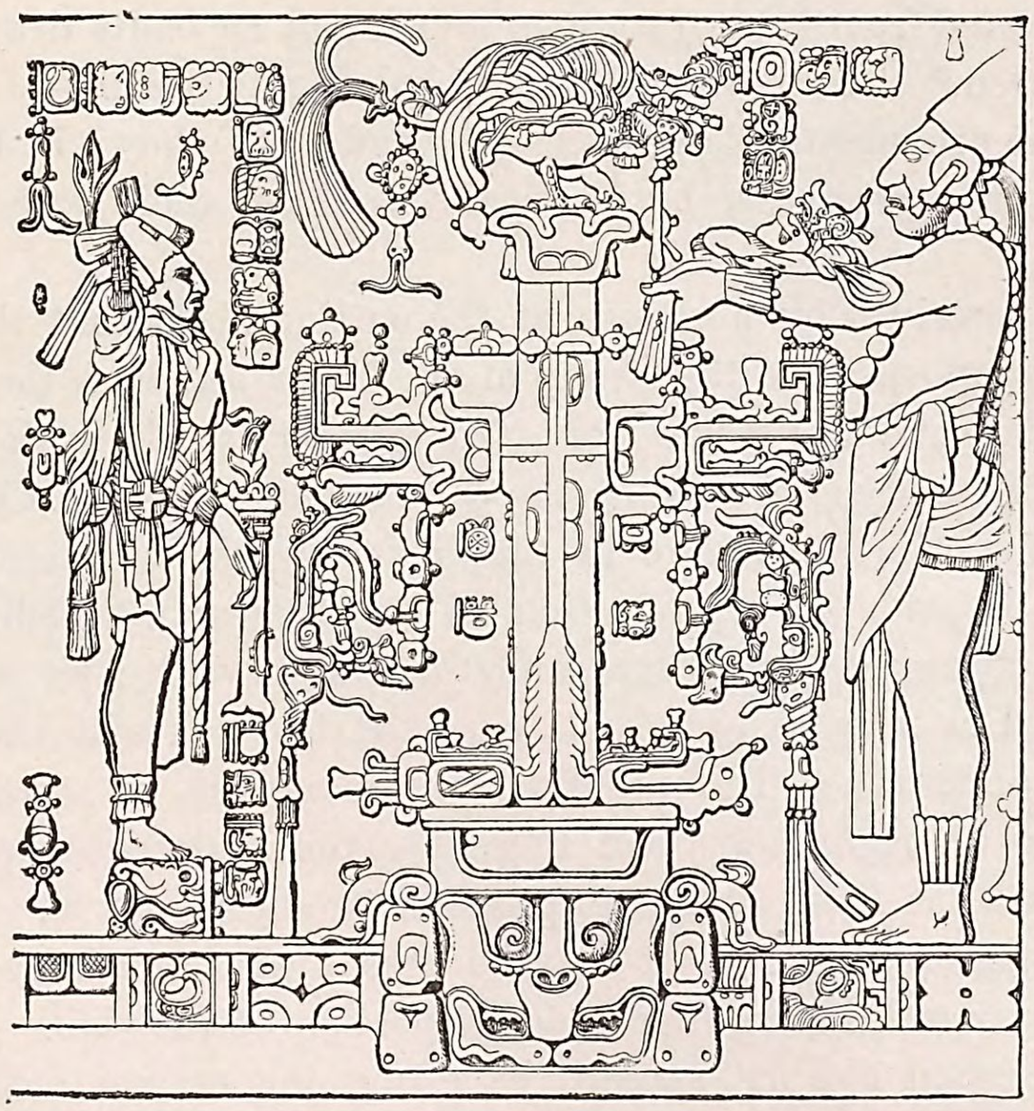


PART OF THE TABLET OF THE CROSS.
(After Del Rio.—Reduced).

It has been previously stated that Del Rio and Dupaix saw the Tablet of the Cross in its entireness—a fact shown by the designs accompanying their reports—and, further, that their illustrations are substantially the same, having been copied from Castañeda's drawing. In the plate accompanying the "Antiquités Mexicaines," however, the whole subject is reversed, the figure of the man holding the child standing on the left side, etc., a mistake which has been avoided in the corresponding plates of Del Rio and Kingsborough.*

I introduce, as Fig. 6, a portion of Del Rio's illustration, comprising a part of the middle slab and its continuation intended to represent the right slab. Fig. 7. is a reduction after Waldeck's plate, showing the middle slab and a portion of the left one. It has been mentioned on a preceding page that M. Charnay's atlas contains a photographic view of the middle tablet, the sculptures

Fig. 7.



PART OF THE TABLET OF THE CROSS.
(After Waldeck.—Reduced).

on which, I will further observe, have been considerably injured by long exposure. This alone would account for the want of distinctness in the photograph; but, in addition, Charney admits that, owing to technical difficulties, he was not successful in his attempts to take photographs at Palenque.† However, I had

* Antiquités Mexicaines; Troisième Expédition, planche xxxvi.—Kingsborough, vol. iv, third part, plate 41. The corresponding plate in Del Rio's report bears no number.

† "Du reste, je l'avoue, mon expédition à Palenqué fut un insuccès déplorable."—*Cités et Ruines etc.*, p. 430.

the right side of his plate traced and reduced by photography, and this reduction joined to a delineation of the left part of the Smithsonian tablet constitutes the illustration Fig. 8.

A comparison of the Smithsonian tablet, as shown on the outline plate, with Fig. 6, discloses at once the total incorrectness of the latter. It will be seen that in the Smithsonian slab a row of fifteen glyphs is placed along the back of the standing figure. Of the fifteen characters composing this row, Fig. 6 exhibits only ten, which are incorrectly drawn, and, moreover, wrongly placed. Behind the row of glyphs there appears on the Smithsonion tablet a sculptured space presenting the outline of a somewhat irregular rectangle or column, containing one hundred and two glyphs, arranged in parallel rows, six of them constituting the width and seventeen the height of the column. Instead of this disposition, Del Rio's plate exhibits only a perpendicular row of eight large characters, selected from those just mentioned, and so badly drawn as almost to defy identification.* The figure of the man holding up a child—I will call him a priest—and the ornamental designs close behind it, as shown in Fig. 6, are likewise wanting in correctness, but, nevertheless, have their value in the present examination.

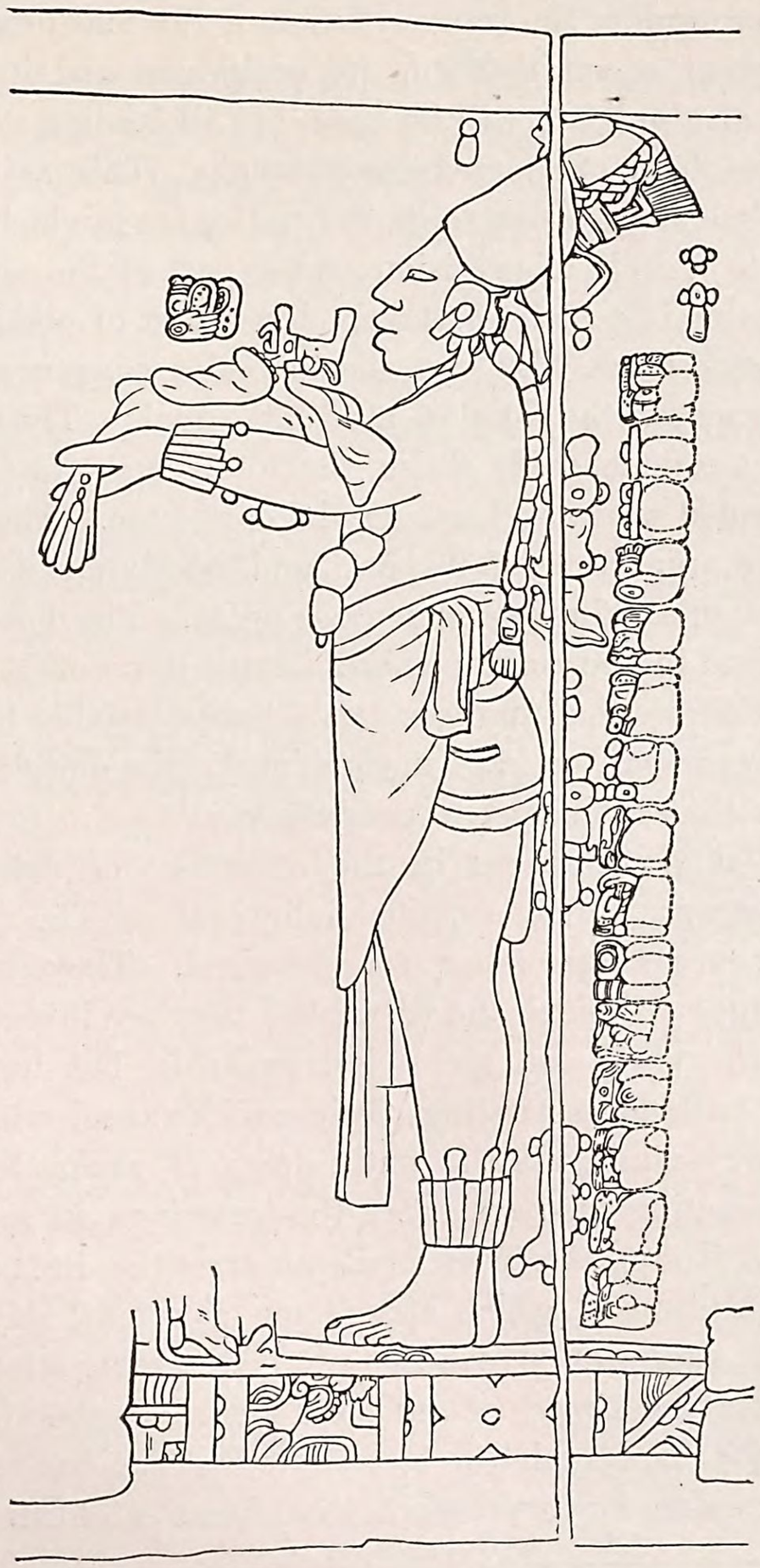
It can be perceived by a glance at the outline plate that the Smithsonian tablet is the complement of the Group of the Cross, although the designs on the Smithsonian slab and the middle one fail to meet exactly at the proper places. This, however, is easily explained by the circumstance that Mr. Catherwood *drew* the original after which the plate in Stephens's work was executed, while the portion added by me is the reproduction of a photograph. Such being the case, it would be surprising if no discrepancy were observable; for a draughtsman, however skillful he may be, cannot be expected to work with the precision of a photographic apparatus. The middle slab, moreover, is much damaged by fractures along its right edge, and there, too, the sculptures appear worn and indistinct. Such, at least, is the impression produced by an examination of Charnay's photograph. Hence it may be presumed that Waldeck and Catherwood had no easy task in drawing the edge portion of the slab.

Mr. Catherwood did not succeed in giving the correct outline of the fez-like cap worn by the priest, and for this reason the corresponding parts of the head-gear do not meet. Such is especially the case with the flower sur-surmounting the ornament which projects from the end of the cap. The outlines of the lower appendage of the cap, to which two small objects (beads?) are attached, fit much better. A portion of the arabesque-like ornament behind the priest's back should be shown in Catherwood's drawing; but it is entirely omitted

* A similar arbitrary arrangement of the glyphs is shown in the remaining (not reproduced) part of Del Rio's plate.

by him, while it is slightly indicated in Fig. 7, and appears more distinctly in the left part of Fig. 8. It is plainly, but not quite correctly, represented in Del Rio's plate (Fig 6). A part of the ornament behind the thighs of the priest can be traced in Catherwood's illustration as well as in that of Waldeck (Fig. 7.) It is almost entirely wanting in Fig. 6 (Del Rio), but can be seen in Fig. 8 (left side). The complement of the ornamental figure behind the priest's feet is dis-

Fig. 8.



PART OF THE MIDDLE SLAB OF THE TABLET OF THE CROSS AFTER CHARNAY'S PHOTOGRAPH, JOINED TO THE CORRESPONDING PART OF THE SMITHSONIAN SLAB.

tinctly shown in Catherwood's and Waldeck's illustrations. In Del Rio's plate this ornament is badly represented and placed much too high. The connection of its parts is tolerably well shown in Fig. 8.

I must observe that it was not easy to trace on Charnay's photograph of the middle slab the outlines of the portions of ornaments along its edge, considering that the photograph has a mottled appearance, which rendered it extremely difficult to distinguish the marginal sculptures. The artist, however, has endeavored to draw them as faithfully as possible.

Any one who examines the representation of the Smithsonian tablet will be struck with the want of symmetry of its sculptures and its incorrect outline. The upright rows of glyphs, it will be seen, are all leaning to the right, and the tablet itself has the shape of an irregular rectangle. This asymmetrical appearance of the slab is not at all owing to its restoration, as might be imagined at first sight, but simply to a lack of precision on the part of the sculptor. Charnay's photograph of the middle slab—certainly the truest of obtainable likenesses—shows similar imperfections. Its two shorter sides converge toward the right, and, as a consequence, the angles are not equal. Though the bas-relief figures on it show a commendable finish, the total aspect of the sculpture is not that of a well-executed work, at least not in our sense. The cross shows some incongruities in the proportions of its parts, and the glyphic signs and ornaments are not disposed in an absolutely harmonious order. The defects here mentioned hardly can be noticed in the corresponding illustrations of M. Charnay's predecessors, who doubtless were all more or less actuated by that tendency prevailing among artists, to represent, perhaps unconsciously, the objects before them in a more shapely form than their appearance justifies.

The absence of accurateness in the execution of details observable at Palenque did not escape Morelet's critical judgment. "The ruins of Palenque," he says, "have been, perhaps, too much eulogized. They are magnificent certainly in their antique boldness and strength; they are invested by the solitude which surrounds them with an air of indescribable, but imposing, grandeur; but I must say, without contesting their architectural merit, that they do not justify, in their details, all the enthusiasm of archæologists. The ornamental lines are wanting in regularity, the drawings in symmetry, and the sculpture in finish. I must, however, make an exception in favor of the symbolical tablets, the sculpture of which struck me as remarkably accurate. As to the faces, their rude execution proves them to be the early attempts of an art yet in its infancy."* Having a piece of sculpture from Palenque before me, I cannot altogether agree with M. Morelet in his estimate of the bas-relief work on the tablets, and the reasons for my dissent have been set forth in the preceding

* Morelet: Travels etc., p. 97.

statements relative to the Smithsonian tablet, which, as I believe, is a fair sample of Palenquean bas-relief sculpture.

The glyphs on that slab form, approximately, quadratic figures, with sides measuring from three and a half to nearly four inches, and project three-sixteenths of an inch (or five millimetres) from the stone. Those which have escaped injury are sharp and well-defined, showing quite distinctly even the smaller incised marks, such as dots, rings, etc. The accompanying photo-lithograph represents the sculpture on the slab so well that any further description appears superfluous.

Having described the Smithsonian tablet as it is, I must not omit to give due praise to the Palenquean sculptors, who succeeded in producing such work with tools of an inferior quality, probably with instruments of flint. The builders of Palenque may have had implements of copper or bronze, but they certainly could not have used them for working a material as obdurate as that of which the Smithsonian slab is composed. Instruments of flint or some other hard stone were much better suited for that purpose.* It has been demonstrated by modern experiments that stone of considerable hardness can be worked without the aid of metallic tools.†

In the preceding pages several extracts relating to the appearance of the Bas-relief of the Cross have been given, and as far as mere description is concerned, but little remains to be added: it is the significance of the group that

---

* "The Yucatecs had small axes of a peculiar metal (doubtless bronze), which were fastened to wooden handles. In battle they used them as weapons, and at home for cutting wood. As the metal was not very hard, they sharpened the edges of their hatchets by beating them with stones."—*Diego de Landa: Relation des Choses de Yucatan;* Paris, 1864, p. 171.—Copper not being found in Yucatan, the natives are supposed to have obtained it from more northern regions by way of barter. The often-mentioned large canoe which, during the fourth voyage of Columbus (1502), was seen landing at the Island of Guanaja (or Bonacca), in the Bay of Honduras, and was supposed to have come from Yucatan, carried among its goods hatchets, bells, and other articles of copper, together with a rude crucible for melting the metal. Relics of copper or bronze seem to be comparatively rare in Yucatan. Some years ago, I had occasion to examine a large collection of Yucatec antiquities sent to New York, with a view to sell it, by Don Florentino Gimeno, of Campeche. Among all the specimens there was not one made of copper or bronze.

† The question was practically solved during the International Anthropological Congress, held at Paris in the year 1867. There are in the Museum of Saint-Germain casts of the sculptured stone plates forming portions of a dolmen on the Island of Gavr'Innis, in the Bay of Morbihan, Brittany. These stones exhibit surfaces covered all over with intricate spiral lines, and on one of the slabs, a compact gray granite, are also seen rude representations of stone axes, the outlines of which are regularly and deeply incised (see Figures 152 and 153 in Fergusson's "Rude Stone Monuments"). The savants who were present considered it impossible to execute such sculptures without employing tools of steel or hardened bronze. But M. Alexandre Bertrand, the director of the museum, was of different opinion, and proceeded to make a trial. A piece of the same granite was worked with stone chisels and axes, and the experiment proved to be a perfect success. After a day's labor, a circle and a few lines were engraved. A chisel of polished flint used during the whole time was hardly injured; one of nephrite had become somewhat blunted, and a similar implement of greenstone still more. But the edge of a bronze axe used in the operation was instantly bent, and it became evident that those sculptures had not been executed with bronze, but with stone. The labor of years, however, was probably required before the builders of that dolmen succeeded in tracing all their figures on the surfaces of the stones. This account is given by Professor Carl Vogt in one of a series of letters addressed, in 1867, from Paris to the Cologne Gazette.

deserves particular consideration. First, however, I will say that I am inclined to ascribe the buildings of Palenque to the Tzendals or some other branch of the great Maya family, my reasons for adopting that view being based on the character of the glyphs there exhibited, to which I shall refer in the following chapter. The group evidently represents a religious ceremony performed close to a cross with a base in the shape of a hideous head, and surmounted by a bird, doubtless intended for the quetzal (*Trogon resplendens*, Gould; *Pharomacrus Mocinno*, De la Llave), a species much valued by the ancient inhabitants of these regions on account of its long tail-feathers of a golden-green hue, which served to adorn the head-dress of persons of high rank.* The figure to the right of the cross I take to be that of a priest; that on the left, judging from the size, represents a youth. Both exhibit somewhat retreating foreheads, a feature indicative of artificial flattening of the head.†

The small figure held up to the bird by the priest is believed to be intended for a child, though it requires some imagination to recognize it as such. As stated in a note on page 23, the figures of the priest and the young man also occur, to all appearance, on the tablet in the Temple of the Sun, and here each of the two holds up a child with a grotesque face, but on the whole much better defined than that shown on the Tablet of the Cross.‡ Moreover, several of the now much mutilated Palenquean bas-reliefs in stucco represent persons with children in their arms.

Though the Group of the Cross has been thought to record some sort of baptismal ceremony, the probability is much stronger that it was intended to commemorate a far less innocent action—the sacrifice of a child. Bishop Diego de Landa, who resided in Yucatan during the second half of the sixteenth century, devotes a chapter to the somewhat complicated baptismal rite among the Mayas, which they designated by a word meaning "to be born again," like *renasci* in Latin. Yet it appears that this ceremony was not applied to new-born children,

---

*"The plumage of the quetzal is most brilliant in the month of March, and it is then that the hunters enter the forest in its pursuit. The hunting is kept up until the season of pairing, when the male bird loses the plumes of its tail. Every year from two to three hundred skins are sent from Coban, where they are worth about half a dollar, to Guatemala, where they bring three dollars. For the most part, these find their way to Europe, where they are badly stuffed and set up as representatives of the species. The ancient inhabitants, if history may be credited, caught these birds in snares, and after having plucked out their beautiful tails, set them at liberty again. To kill them was a crime punishable by law. At this early period it is said the plumes of the quetzal constituted the only article of export from Vera Paz—a poor country, covered with forests and difficult of access. Much sought after by artists, they served to set off the curious and splendid feather-mosaics which so greatly excited the admiration of the conquerors."—*Morelet: Travels etc.*, p. 335.—*Quetzalli*, according to Clavigero, signifies "green feather."

† According to some of the early Spanish historians (Landa, Herrera), this practice prevailed among the Mayas at the time of the conquest.

‡ In Del Rio's plate, as will be seen, the child is quite distinctly figured; but its outlines appear much more fantastical in the illustrations of Waldeck and Catherwood, and, above all, in Charnay's photograph.

but to such as were old enough to understand its purport to some extent.* The same author gives a rather disgusting account of the human sacrifices practised by the Mayas, who were, however, far less barbarous in that respect than the Aztecs at the period when Cortés and his followers invaded the vale of Anáhuac. "On the occasion of a calamity or of a public necessity, the priests sometimes gave orders to perform human sacrifices, to which all contributed: some by furnishing the means for buying slaves, others by giving up their little children (*sus hijitos*), which they did for showing their devotion,"† The event of the baptism of a child certainly was not deemed among the Maya nations of sufficient importance to be perpetuated in stone or stucco, while the sacrifice of a child, by which, according to their conceptions, some great disaster had been averted, evidently constituted a more powerful motive for transmitting the recollection of the occurrence to coming generations. If, however, as has been suggested, the small figures seen in the hands of persons on the Tablet of the Cross as well as on that in the Temple of the Sun, should not represent children at all, but *idols*, the bas-reliefs in question, of course, cannot be brought in connection with baptismal or sacrificial rites, but must be considered as illustrative of some other act of worship.

Here is the proper place for making some observations on the significance of the Palenquean cross. The early Spanish writers allude quite frequently to crosses which were seen by the European invaders in Mexico, Central America, and other parts of the new continent, and though much might be said on the subject, I could not treat it in an exhaustive manner without being led beyond the proposed limits of this monograph. These writers, unable to separate the cross from the Christian religion, ascribed its existence in America to the agency of missionaries, who had preached the Gospel there long before the advent of the Spaniards. Strangely enough, the Apostle Saint Thomas was supposed to have gone to America for the purpose of spreading the Christian faith, and attempts have been made to identify him with the Mexican god of the air, the deified culture-hero Quetzalcohuatl or "Feathered Serpent." This curious theory of a pre-Columbian propagation of Christianity in America has been adhered to until within recent times, one of its supporters being Professor Tiedemann, the distinguished anatomist, who thus adds one more to the many proofs that great proficiency in one direction does not exempt from error in another.‡ The theory is

* Landa: Relation des Choses de Yucatan; Spanish and French text; edited by the Abbé Brasseur de Bourbourg; Paris, 1864, § XXVI.

† Ibid., § XXVIII.—They killed their victims in different ways. One of their methods consisted in throwing them alive into a large pit at Chichen-Itza, from which, Bishop Landa says, they were supposed to come out again in three days, though none, he humorously adds, ever re-appeared (*aunque nunca mas parecian*).

‡ Something like a parallelism may be traced in the tendency of Greek and Roman writers to recognize their own gods and goddesses in the divinities of the barbarous nations of whom they treat. Herodotus in particular furnishes many examples. According to Cæsar, the Gauls worshiped Mercury, Apollo, Mars, Jupiter and Minerva; they considered themselves as descendants of Pluto, etc.

about as bad as that which derives the American Indians from the Jews; and yet Lord Kingsborough has expended a great deal of learning in the vain attempt to prove the descent of the Mexicans from the Hebrews.

The cross certainly was a symbol in the old world in ages anteceding the Christian era,* and in the new long before Columbus unfurled the banner of Castile and Leon on the shore of Guanahani. Crosses of different forms often occur on Egyptian sculptures and paintings. A small cross with an oval or round handle, the *crux ansata*, is very frequently seen, as a symbol of life, in the hands of Egyptian deities. On coins struck at Sidon, Berytus, etc., Astarte, the Syrian goddess, whose worship was accompanied by rites of an obscene character, is represented as holding in her hand a long cross resembling those carried in Catholic processions. The goddess is seen standing either in a boat or in a temple, the cross being always the most conspicuous among her attributes.† This emblem, indeed, was common among many ancient nations, and though it may often have been employed as a mere ornament, it is probable that, where it appears in ante-Christian times in a perceptibly symbolic character, it was intended to express the reciprocal principles of nature. This is a subject on which I have no intention to enlarge in this publication, and I only allude to it on account of its bearing on the significance of the cross in America. However, it will be evident to every one, who has the faculty of divesting himself for a time from now prevailing ideas, that the mysteries of generation must have powerfully acted upon the imagination of men in earlier ages, and must have led, in consequence of a tendency characteristic of a certain stage in human development, to the symbolization of that life-giving and life-continuing agency. In the course of time the meaning of the emblem became modified, though it always appears to relate in some sense to the creative energy of nature.

We know from the testimony of several early Spanish authors that the cross was venerated in Yucatan as a rain-procuring agent. When Grijalva landed, in 1518, on the now deserted and forest-covered Island of Cozumel,‡ near the coast of Yucatan, he was surprised at the sight of such a cross erected in an enclosure of one of the numerous temples on the island. "They saw," says Herrera, "some sanctuaries and temples, and one in particular, in the shape of a four-sided tower, broad at the base and hollow at the top, where there were four large windows and corridors. This hollow part formed the chapel, in which were idols, and at its back was a sacristy where the objects used in

* The cross, it is well known, was also an instrument of punishment among many ancient nations, and as such became the symbol of Christianity after the death of its founder.

† Such coins are figured in McCulloh's "Researches etc."; Baltimore, 1829, pp. 332–33, and in Lafitau's "Moeurs des Sauvages Amériquains;" Paris, 1725, tom. i, planche 17.

‡ The Island of Cozumel (originally Cuzamil, "Island of Swallows"—Isla de Golondrinas—according to Cogolludo) was, prior to the advent of the Spaniards, a sort of Indian Mecca, to which the natives made pilgrimages for performing their religious ceremonies.

the service of the temple were kept. At its foot was an enclosure built of stone and lime, embattled and whitewashed, and in the midst of it a cross of lime, three varas high, which they held to be the god of rain, being quite confident that it never would be wanting if they prayed devoutly for it. And in other parts of this island and in many of Yucatan were seen crosses of the same shape, and painted, and not made of latten, as Gomara says, because they never had any, but of stone and wood."*

Herrera's description of the tower (teocalli) and cross corresponds to that of Gomara, the earlier of the two authors. According to the latter, the cross was ten spans high (*tan alta como diez palmos*), and was worshiped by the Indians as the god of rain, to whom they went with great devotion in procession when rain and water failed, offering sacrifices of quails, burning incense, and sprinkling water, for appeasing his anger. This veneration of the cross, he says, made them more ready to adopt the Christian symbol.† The Yucatan crosses are further referred to by Cogolludo, Peter Martyr, and others; but having said all that is necessary for my purposes, I refrain from quoting from these authors.

The Licentiate Palacio saw among the ruins of Copan, in Honduras, a cross of stone, three spans in height, with one of the arms broken off.‡ The Abbé Clavigero mentions several places in Mexico where crosses of Indian origin have been noticed, yet without stating for what purpose the natives had erected them. Concerning the supposed missionary labors of Saint Thomas in America he prudently says: "We never could reconcile ourselves to this opinion."§ Father Antonio Ruiz speaks of a miraculous cross found in a part of Paraguay, which, owing to this circumstance, has been called Santa Cruz. The father regards this cross as a proof for confirming the opinion that the Apostle Saint Thomas had announced the Christian religion in Brazil, Paraguay, and Peru.‖

Garcilasso de la Vega, the chronicler of Peru, gives an account of a cross

---

* "Vieron algunos Adoratorios, i Templos, i vno en particular, cuia forma era de vna Torre quadrada, ancha del pie, i hueca en lo alto, con quatro grandes Ventanas, con sus Corredores, i en lo hueco, que era la Capilla, estaban Idolos, i à las espaldas estaba vna Sacristia, adonde se guardaban las cosas del servicio del Templo: i al pie de esto estaba vn cercado de Piedra, i Cal, almenado, i enlucido, i enmedio vna Cruz de Cal, de tres varas en alto, à la qual tenian por el Dios de la lluvia, estando mui certificados, que no les faltaba, quando devotamente se la pedian: i en otras partes de esta Isla, i en muchas de Jucatàn, se vieron Cruces de la misma manera, i pintadas, i no de Latòn, porque nunca lo huvo, como dice Gomara, sino de Piedra, i Palo."—*Herrera: Historia General de los Hechos de los Castellanos en las Islas y Tierra Firme del Mar Oceano;* Madrid, 1725–30, dec. ii, lib. iii, cap. i.—The first edition appeared in 1605–15.

† Gomara: Hispania Victrix. Primera y Segvnda Parte de la Historia General de las Indias. . . Con la Conquista de Mexico y de la Nueva España; Medina del Campo, 1553; segunda parte, fol. 10.

‡ Carta dirijida al Rey de España, por el Licenciado Dr. Don Diego Garcia de Palacio, año 1576; with English translation and notes by E. G. Squier; New York, 1860, p. 93.

§ Clavigero: History of Mexico; translated from the Italian by Charles Cullen; Philadelphia, 1817, vol. ii, p. 14.

‖ Ruiz: Conqvista Espiritval hecha por los Religiosos de la Compañia de Jesus, en las Prouincias del Paraguay, Parana, Vruguay, y Tape; Madrid, 1639, §§ XXI–XXV. In this book the sheets only are numbered.

preserved at his time in Cuzco, the capital of the Inca empire. I extract (in part) the passages relating to that cross from Sir Paul Rycaut's quaint translation, the original Spanish work not being at my disposition :—" In the City of *Cozco* the *Incas* had a certain Cross of white Marble, which they called a *Crystalline Jaspar;* but from what time it had been kept there, is not certain. In the year 1560 I left it in the Vestry of the Cathedral Church of that City; I remember it was hanged upon a Nail with a List of black Velvet; which when it was in the power of the *Indians*, it was hanged by a Chain of Gold or Silver, but afterwards changed by those who removed it. This Cross was square, being as broad as it was long, and about three fingers wide. It formerly remained in one of those Royal Apartments, which they call *Huaca*, which signifies a Consecrated place; and though the *Indians* did not adore it, yet they held it in great veneration, either for the Beauty of it, or some other reason, which they knew not to assign."*

It has been shown by the preceding examples, which could be considerably multiplied, if it were deemed necessary, that the cross was recognized as a symbol among the more advanced nations of America. I will now briefly quote the opinions of some authors treating of the subject in question, beginning with Dr. J. G. Müller, who has written a volume of 706 pages on the aboriginal religions of America. Being a professor of theology, his calling must exempt him from the imputation of any particular tendency to indulge in theories which are at variance with the moral sentiments now obtaining among civilized nations. Having mentioned the Cozumel cross as a god of rain, and alluded to the occurrence of crosses in other parts of America, he continues :—

" The cross is also met as a nature-symbol (*Natursymbol*) among the ancient nations of our hemisphere, a fact which, in view of its simple shape, can hardly cause any surprise. It was employed as such by the Hindoos, Egyptians, Syrians, and Phœnicians, and it decorated the head of the Ephesian goddess. But it is just the simpleness of its form which renders an interpretation difficult, because it admits of too many possibilities. All attempts thus far made to interpret it as a Nile-key, phallus, or sign of the seasons, unite in the conception of the fructifying energy of nature. Hence it appears in connection with sun-gods and the Ephesian goddess, and it is also the fitting symbol of the rain-god of tropical lands, whom it represents, as stated by the natives. In China, too, the rain signifies conception, and the Greek myth of the golden rain which the cloud-gathering Jupiter showers upon Danaë has no other sense. Wherever, therefore, mention is made of a veneration of the cross in Central America (and the adjacent regions), it appears least hazardous to connect its worship with the fertilizing rain-god, crossing the receiving maternal earth. . . . Stephens's

* Garcilasso de la Vega: The Royal Commentaries of Peru etc.; translated from the Spanish by Sir Paul Rycaut, Kt.; London, 1688, book ii, chap. iii, p. 30.

denial that the heathen Indians ever worshiped crosses is incomprehensible.* He speaks himself in his work on Central America of such a cross at Palenque and gives a representation of it. Above the cross is a bird, and at its sides are two human figures contemplating it and apparently offering a child. . . . The same cross, moreover, occurs in old Mexican hieroglyphical manuscripts, as, for instance, in the Dresden Codex, and in the manuscript of M. de Fejérváry, at Budapest, Hungary. At the end of the last-named is seen a kind of Maltese cross with a bloody deity in the centre. On each of the four broad arms of the cross is represented—though differently in every instance— a T-shaped structure with a human figure standing at either side, and a bird perched upon the horizontal beam. . . . The bird which appears associated with the cross on the Palenque bas-relief and in the above-mentioned manuscript is a fitting attribute of the god of the rain and sky. To the bird and the rain belong the regions of the air."†

From the foregoing it may be deduced that Professor Müller considers the ante-Christian cross in its original conception as a phallic symbol, not only in the old world, but also in the new. Quite different are the views of Dr. D. G. Brinton, as expressed in his "Myths of the New World," a work undoubtedly betokening uncommon learning and research. To him the cross is merely the symbol of the four cardinal points—the four winds. "The Catholic missionaries," he says, "found it (the cross) was no new object of adoration to the red race, and were in doubt whether to ascribe the fact to the pious labors of Saint Thomas or the sacrilegious subtlety of Satan. It was the central object in the great temple of Cozumel, and is still preserved on the bas-reliefs of the ruined city of Palenque. From time immemorial it had received the prayers and sacrifices of the Aztecs and Toltecs, and was suspended as an august emblem from the walls of temples in Popayan and Cundinamarca. In the Mexican tongue it bore the significant and worthy name 'Tree of our Life,' or 'Tree of our Flesh' (Tonacaquahuitl).

"It represented the god of rains and of health, and this was everywhere its simple meaning. 'Those of Yucatan,' say the chroniclers, 'prayed to the cross

---

* It is not without some justice that Stephens is taken to task for making that observation, considering that he was acquainted with the writings of Herrera and Cogolludo, who, as we have seen, refer to the Yucatec crosses and their worship.—"Die Kreuze, welche auf Cozumel, in Yucatan und anderen Gegenden von Amerika die Aufmerksamkeit der Conquistadores in so hohem Grade auf sich gezogen haben, beruhen keineswegs auf *Mönchssagen*, sondern verdienen, wie Alles, was auch nur entfernten Bezug auf den religiösen Kultus der eingeborenen Völker von Amerika hat, eine ernstere Untersuchung."—*Humboldt: Kritische Untersuchungen über die historische Entwickelung der geographischen Kenntnisse von der neuen Welt;* Berlin, 1852, Bd. i, S. 544.

† Müller: Geschichte der Amerikanischen Urreligionen; Basel, 1855, p. 497.—I have taken the liberty, in my translation, of rendering Professor Müller's description of the cross represented in M. de Fejérváry's manuscript a little more complete. The manuscript in question is reproduced in vol. iii of Lord Kingsborough's work.

as the god of rains when they needed water.' The Aztec goddess of rains * bore one in her hand, and at the feast celebrated to her honor in the early spring victims were nailed to a cross and shot with arrows. Quetzalcoatl, god of the winds, bore as his sign of office 'a mace like the cross of a bishop;' his robe was covered with them strown like flowers, and its adoration was throughout connected with his worship.† When the Muyscas would sacrifice to the goddess of waters, they extended cords across the tranquil depths of some lake, thus forming a gigantic cross, and at their point of intersection threw in their offerings of gold, emeralds, and precious oils. The arms of the cross were designed to point to the cardinal points and represent the four winds, the rain-bringers." ‡

Dr. Brinton's attempt to interpret the meaning of the Palenquean Group of the Cross is certainly very ingenious, and I transcribe it here in consideration of its direct bearing on the subject treated in this monograph :—

"As the symbol of the fertilizing summer showers, the lightning serpent was the god of fruitfulness. Born in the atmospheric waters, it was an appropriate attribute of the ruler of the winds. But we have already seen that the winds were often spoken of as great birds. Hence the union of these two emblems in such names as Quetzalcoatl, Gucumatz, Kukulkan, all titles of the god of the air in the languages of Central America, all signifying the 'Bird-serpent.' Here also we see the solution of that monument which has so puzzled American antiquaries, the cross at Palenque. It is a tablet on the wall of an altar representing a cross surmounted by a bird and supported by the head of a serpent. The latter is not well defined in the plate in Mr. Stephens's 'Travels,' but is very distinct in the photographs taken by M. Charnay, which that gentleman was kind enough to show me. The cross, I have previously shown, was the symbol of the four winds, and the bird and serpent are simply the rebus of the air-god, their ruler." §

This explanation would be plausible enough, were it not for the fact that the figure forming the base of the cross is probably not intended for a serpent's head. I cannot recognize it as such, either in Stephens's illustration or in Charnay's photograph of the middle slab, and the zoölogists of the United States National Museum, whom I consulted on the subject, fully corroborate this view. Charnay himself calls it a hideous face of an idol (*une hideuse figure d'idole*). The Mexicans and Central Americans, moreover, generally imitated, in their sculptures, the serpent, which constituted a prominent element in their myth-

* Chalchihuitlicue.

† "Quetzalcoatl fut le premier qui planta et adora la croix, que l'on nomma Tonaca-Quehuitl, ce qui veut dire arbre de la nourriture ou de la vie."—*Ixtlilxochitl: Histoire des Chichimèques;* Paris, 1840, tom. i, p. 5 (Ternaux-Compans Collection).

‡ Brinton: The Myths of the New World; New York, 1868, p. 95.

§ Ibid., p. 118.

ology, with tolerable correctness, insomuch that it is easily recognizable; and hence the Palenquean figure cannot be regarded as even a conventional representation. But a still stronger argument against Dr. Brinton's opinion is found in the last group of the Fejérváry pictograph at Budapest, in which, as has been stated, a design bearing a remarkable analogy—to say the least—to the Palenquean Group of the Cross is four times figured. The lower arm of the cross, represented as inverted in Fig. 9, shows a stem with horizontal branches surmounted

FIG. 9.

PART OF A FIGURE IN THE FEJÉRVARY MANUSCRIPT.
(After Kingsborough).

by a bird, and two persons, apparently in the act of praying, standing near it. The base of the stem is formed by an unsightly head, to which two forefeet terminating in claws or toes are added, no other portion of the body being visible. This creature certainly resembles more a frog than a snake.*

Dr. Brinton is very hostile to the phallic theory, combating it with greater vehemence than the occasion requires. In calling it "debasing," he seems to overlook the fact that the pudency of Christian nations of our time is by no means an innate quality, but simply the result of long-continued training. The question is not, whether a conception or custom is repugnant to our sensibilities, but whether it can be traced as having obtained at certain stages in the development of man. Nothing, for instance, excites our horror in a higher degree than cannibalism, and yet it is more than probable that in remote ages people akin to our race indulged in that to us most detestable practice. Indeed, if the statements of Herodotus and other ancient authors are to be credited, anthropophagy still survived among certain European nations in historical times. No one can

* In the second edition of his "Myths" (New York, 1876), which I saw for the first time after the above was written, Dr. Brinton expresses a modified opinion concerning the character of the figure. He says: "The descending arm (of the cross) rests upon a skull, possibly that of a serpent, but more probably human" (p. 124).

foretell how those who come after us will look upon *our* modes of thinking and living, which no doubt will be greatly modified in the onward march of civilization.

The subject to which the character of this publication compelled me to allude has been treated by Mr. Squier in his work entitled "The Serpent Symbol and the Worship of the Reciprocal Principles of Nature in America," and of late quite fully by Mr. Bancroft in his often-quoted "Native Races of the Pacific States." That the views of the last-named author differ from those expressed by Dr. Brinton is shown by the following passage relating to the cross:—"The frequent occurrence of the cross, which has served in so many and such widely separated parts of the earth as the symbol of the life-giving, creative, and fertilizing principle in nature, is, perhaps, one of the most striking evidences of the former recognition of the reciprocal principles of nature by the Americans; especially when we remember that the Mexican name for the emblem, tonacaquahuitl, signifies 'tree of one life, or flesh.'"*

Mr. Squier, it should be stated, considers the Yucatan crosses as differing in significance from the tonacaquahuitl, or tree of life, which he thinks is represented in the cross at Palenque,† and Dr. Valentini, to judge from a passage in a letter addressed to me, likewise regards the Palenquean sculpture as the symbolic tree of life. Until better informed, one might feel inclined to see in the Palenquean bas-relief a monument commemorative of a propitiatory sacrifice to the rain-god, made perhaps during a period of great suffering arising from want of water. Yet, the meaning it was intended to convey may be quite different, and will not be positively known until the purport of the accompanying characters ceases to be a mystery.

---

* Bancroft: Native Races etc.; vol iii, p. 506.

† Note 30 to his translation of Palacio (p. 120).

CHAPTER V.

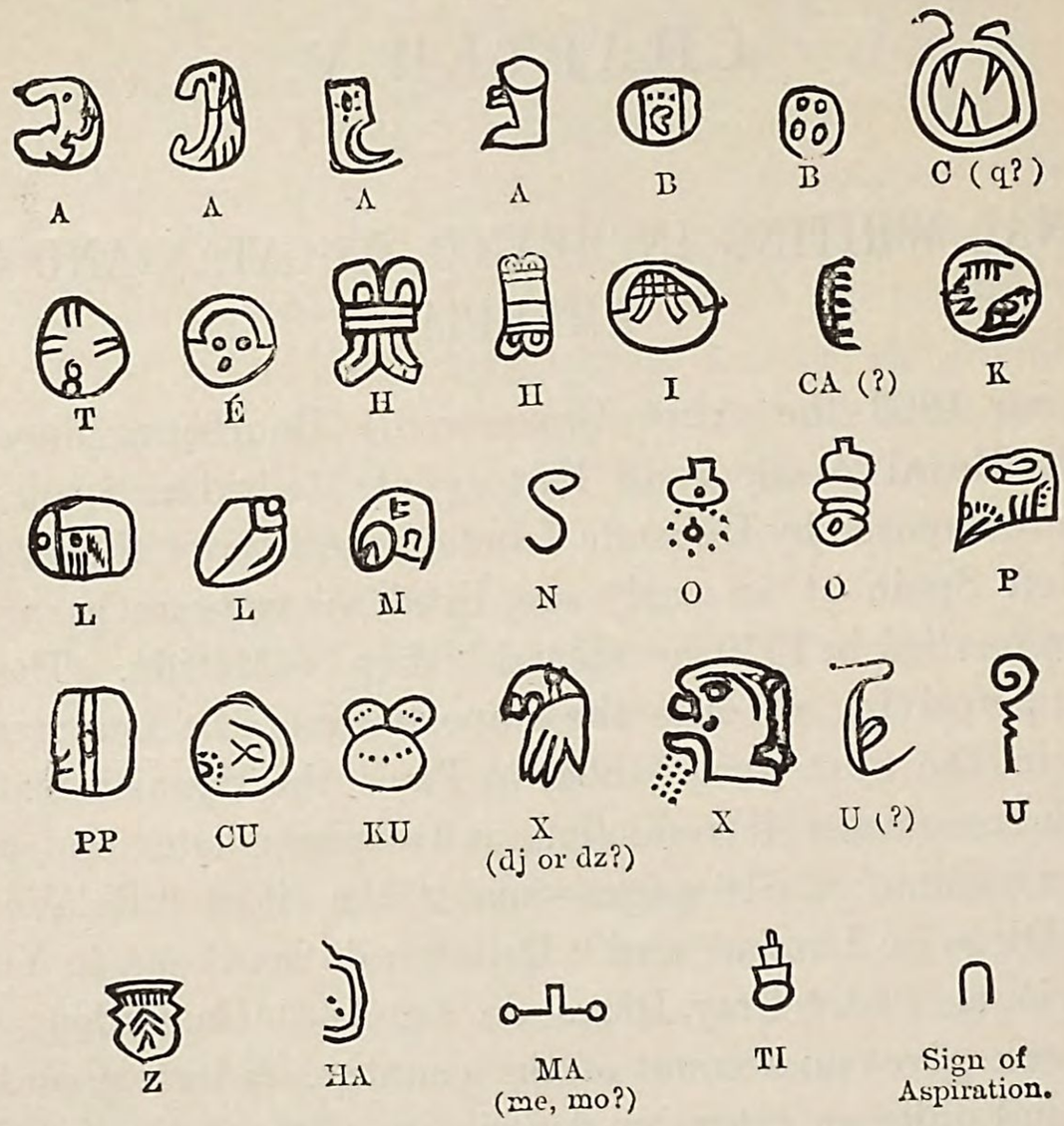
ABORIGINAL WRITING IN MEXICO, YUCATAN AND CENTRAL AMERICA.

In the year 1863 the Abbé Brasseur de Bourbourg discovered in the archives of the Royal Academy of History at Madrid a Spanish manuscript copied from one composed by Diego de Landa, a member of the Franciscan order, who, having left Spain at an early age, lived many years as a missionary in Yucatan, where he died in 1579 as second bishop of Mérida. The indefatigable French savant, perceiving at once the importance of the manuscript, copied it, and published in the next year (1864) at Paris the Spanish text with accompanying French translation, introduction, and copious notes and additions—the whole forming a volume of 516 pages—under the titles "Relation des Choses de Yucatan de Diego de Landa," and "Relacion de las Cosas de Yucatan sacada de lo que escrivió el Padre Fray Diego de Landa de la Orden de San Francisco." This work gives an account of the country, its history and conquest by the Spaniards, and quite an extensive description of the native inhabitants, their mode of living, arts and religion; but the prominence it has acquired among books of a similar character is chiefly due to the circumstance that its author presents delineations of the signs which, according to his statement, the natives employed in writing, and also of those expressing the days and months of their calendar. An explanatory text accompanies these characters, the division of time in particular being treated in quite a comprehensive manner. Some enthusiastic savants, specially interested in the decipherment of Palenquean and other glyphs, and of the few aboriginal manuscripts which have escaped the destroying zeal of Spanish priests, deemed the publication of these characters a literary event, fraught with important consequences. It was thought a kind of Rosetta stone had been discovered, by the aid of which a new light might be thrown on former periods of American history. The subject of interpretation was taken up at once by French scholars, who, in general, are more given to the study of American archæology than those of other European countries; but the results, as we shall see, have thus far not justified the high expectations at first entertained.

Landa's alphabet (Fig. 10) consists of thirty-three signs, twenty-six of them

standing for letters, six for syllables, and one (the last) denoting aspiration. Some of the letters, A, B, H, etc., are represented by several characters. The manner in which the bishop comments on the use of these signs is very unsatis-

FIG 10.

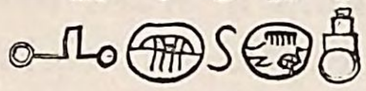


LANDA'S MAYA ALPHABET.

factory and obscure, showing that he was unable to appreciate the future importance of his communication. This absence of clearness, however, may be partly owing to the carelessness of the scribe, for the manuscript published by Brasseur was not the original, but a copy supposed to have been made about thirty years after the author's death. Brasseur also thinks that the copyist permitted himself to omit some portions of the text. Landa's observations on Maya writing begin thus: "The people made use also of certain characters or letters with which they wrote down in their books their ancient affairs and their sciences (*sus cosas antiguas y sus sciencias*), and by means of these and by certain figures, and by particular signs in these figures, they understood their affairs, made others understand them, and taught them. We found among them a large number of books written in these letters, and as there was not one which did not contain superstitions and devilish lies, we burned all of them, which hurt their feelings in a marvelous manner and gave them pain."* The confession of this

* Landa: Relation des Choses de Yucatan, p. 316.

vandalism, which rivals similar deeds of Zumárraga, the first archbishop of Mexico, and other Spanish ecclesiastics of that period, plainly shows that Landa was no less imbued with the fanatical spirit of his time than his contemporaries.

He gives several examples of Maya spelling, but only one of them is perfectly intelligible. *Ma in Kati*, he says, means, "I will not;" they write it in this manner: ma i n ka ti  .

Quite diverging opinions have been expressed with regard to the value of Landa's alphabet: while some, as mentioned, see in it the key by which the mystery of Central American glyphs may ultimately be solved, others are less sanguine, and not a few even go so far as to deny that it possesses at all the character attributed to it by the bishop of Mérida. Among the latter is Professor H. Wuttke, an author who has made the subject of writing in its various stages his special study. He says:—"We must decline for the present to accept the view entertained by several modern scholars that the Central Americans were acquainted with alphabetical writing. None of the earlier historians who still had intercourse with the more educated Mexicans has pronounced such a view, excepting Landa, whose statements are very indistinct. In some cases their observations even point to the contrary. In writing in their books, Landa says, the Yucatecs made use of certain characters or letters (*de ciertos carateres o letras*), and with the aid of these and figures and certain marks in the figures (*y con ellas, y figuras, y algunas señales en las figuras*) they understood their affairs (*sus cosas*). Landa communicates an alphabet of these letters, which, however, may be only an attempt made by the natives *after the introduction of the Spanish alphabet.* Landa's deficient insight into the Yucatec system of writing is not only shown by the indistinctness of his communications—for an indistinct account nearly always betokens non-understanding—but also by his uncertainty concerning the value of two of the signs. To the sign ∩ he adds as an explanation '*signo de aspiracion?*', and to the sign for MA '*quizá tambien* (perhaps also!) *ME ó MO.*'"*

Landa evidently thought very little of Yucatec writing, treating the subject almost as a thing below his notice. He had not taken the trouble of informing himself sufficiently concerning the application of Maya characters, which, as he himself states, had already entirely fallen into disuse at his time, in consequence of the introduction of Spanish letters among the natives.†

"We consider Central American writing," Wuttke continues, "as *real picture-writing*, and we are of opinion that Gama is right in denying the existence of a general, thoroughly applicable key. The very nature of picture-writing

* Wuttke: Die Entstehung der Schrift, etc.; Leipzig, 1872, S. 205.

† Landa: Relation etc., p. 322.

evolves a diversity of methods."* On a subsequent page Wuttke explains himself more definitely concerning the origin of the alphabet presented by Landa. After the conquest, he thinks, the Indians had selected from among their characters (*aus ihrem Schriftvorrathe*) a certain number, which they employed instead of letters when they wanted to write in their own language. "The Yucatec alphabet hardly can have sprung from a Maya root. The influence of the Spanish alphabet on the natives caused its origin."† He thus admits that the Mayas had characters of their own at the time of the Spanish invasion, but he regards their application as phonetic signs as a consequence of their intercourse with the conquerors.

Dr. Valentini, in his lecture on the Mexican calendar-stone, expresses himself even with greater assurance than Wuttke:—"This Yucatan alphabet," he says, "is nothing more than an attempt by a missionary bishop, Diego de Landa, to teach the natives their own language phonetically, in our manner, but with their own symbols. I will not follow this subject further, but I am willing to give more detailed explanations hereafter if it is desirable." These explanations *are*, indeed, very desirable, and it is hoped that Dr. Valentini will soon impart the benefit of his experience.

The early Spanish authors sometimes refer to books which they saw among the natives of those parts, and also to the methods employed by them for expressing their ideas by signs. Las Casas, the venerable bishop of Chiapas, in particular, dilates on that subject in his "Historia Apologética des las Indias Occidentales." His long sojourn in the new world, especially in parts to which the Spaniards had not yet penetrated, afforded him unusual facilities for becoming acquainted with the details of Indian life. "In all the republics of these countries," he says, "in the kingdoms of New Spain, and elsewhere, there were persons who performed the duties of chroniclers and historians. They had knowledge of the origin of the religion and of all matters pertaining to it; of the gods and their worship, and no less of the founders of towns and cities. They knew the beginnings of the kings and persons of rank and of their dominions; the modes of their election and succession; the number and qualities of former princes; their works and memorable actions, good and bad; whether they had well or badly ruled, etc. . . . These chroniclers kept the reckoning of the days, months and years. Though their writing was not like ours, they had, nevertheless, their figures and characters, by means of which they understood all they wanted, and thus they had their large books, composed with such ingenious and skillful art that we might say our letters had not been of any great use to them (*que podriamos decir que nuestras letras no les hicieron mucha ventaja*). Our

* Wuttke: Die Entstehung der Schrift, etc., S. 205.
† Ibid., pp. 237 and 238.

ecclesiastics have seen such books, and some have fallen under my own notice, though many had been burned at the instigation of the monks, who feared that the portions touching the religion might prove noxious to the natives. It happened occasionally that some among them, having forgotten certain phrases or particulars of the Christian doctrine in which they were instructed, and being unable to read our letters, undertook to write those parts in full with their own figures and characters, which they did in a very ingenious manner by substituting the figure which corresponded in their language to the sound of our vocable: thus, for saying *amen*, they painted something like water (*a*, root of *atl*, Mexican), then a maguey (*me*, root of *metl*), which in their language nearly sounds like *amen*, because they say *ametl*, and so they proceeded in other cases."*

This method was in accordance with the ancient Mexican system of writing, which has been so well illustrated by M. Aubin. According to this distinguished savant, Mexican writing shows at least two degrees or stages of development. "Their rougher compositions," he says, "with which authors thus far have almost exclusively been occupied, resemble much the rebus serving for the amusement of children. Like the rebus they are generally phonetic, but often also confusedly ideographic and symbolic. Such are the names of cities and kings quoted by Clavigero after Purchas and Lorenzana, and by a host of authors after Clavigero. M. de Humboldt defines them in a satisfactory manner as *signs susceptible of being read*, and, further, by stating *that the Mexicans knew how to write names by uniting some signs which recalled sounds.*"†

As an example of this class M. Aubin gives the name of the fourth king of Mexico, Itzcoatl or "Obsidian Serpent." The figure expressing that name represents a serpent, *coatl*, with darts of obsidian, *itz-tli*, projecting from its back (Fig. 11). The same name, however, was indicated by another method, which

Fig. 11.

Fig. 12.

M. Aubin appropriately calls the more advanced stage in the Mexican art of writing. In this case the design (Fig. 12) shows a weapon armed with blades of obsidian, *itz-tli*, and and an earthen pot, *co-mitl*, above which is seen the sign for

* Las Casas: Historia Apologetica de las Yndias Occidentales; vol. iv, cap. 235, p. 321 etc.; manuscript copy in the Library of Congress, Washington, D. C.

† Brasseur de Bourbourg: Histoire des Nations Civilisées etc.; tom. i, p. xliv.—I quote from Brasseur, not having M. Aubin's writings at my disposition.

water, *atl.** "Here," says Mr. Tylor, "we have real phonetic writing, for the name is not to be read according to sense, 'knife-kettle-water,' but only according to the sounds of the Aztec words, Itz-co-atl." †

This is certainly phonetic writing in a certain sense, but not of as high an order as that claimed by Landa for the native inhabitants of Yucatan. I am not aware that other Spanish chroniclers of the sixteenth century have corroborated his statement, excepting Mendieta, who observes that though the natives were not acquainted with writing they did not feel its want on account of the paintings and characters which they employed instead of letters. "But in the country of Champoton, it is said, they were in use, and the natives understood each other by means of them as we do by ours."‡ This observation, though not very positive, derives some value from the circumstance that it relates to the natives of Champoton§, a place belonging to the peninsula of Yucatan.

I do not know whether any one in the United States has practically tested the value of Landa's alphabet by applying it to the purpose of interpretation. Dr. Brinton, however, published in 1870 a pamphlet under the title "The Ancient Phonetic Alphabet of Yucatan," in which he gives an interesting résumé of the subject and reproductions of the alphabetical signs. Having alluded to the small number of manuscripts in the language of Yucatan that have been preserved, he says: "There is material almost inexhaustible in the inscriptions preserved upon the stone temples, altars, and pillars of Yucatan, which we may with great confidence look to see deciphered before many years. The only serious difficulty which is at present in the way is our want of knowledge of the ancient Maya language." He then refers to the complete and carefully composed manuscript dictionary of the Maya language deposited in the Brown Library at Providence, Rhode Island, and awaiting publication. "With it in hand," he says, "the deciphering of the inscriptions at Palenque, Uxmal, Itza, and the other ruined cities of Yucatan, and of the manuscripts already mentioned, will become certainly a less serious task than that of translating the cuneiform inscriptions of Nineveh."‖ This was Dr. Brinton's impression nine years ago; but further researches have considerably modified his view, as the following extract from a letter addressed to me (March 4th, 1879) will show:—"My later reading has led me to doubt whether De Landa's alphabet is really an alphabet in

---

* Brasseur de Bourbourg: Histoire des Nations Civilisées etc., tom. i, p. XLV.—Many other examples might be given. The system of writing here briefly indicated survived among the natives of Mexico for a long time after the conquest, special officers being appointed for the purpose of interpreting the documents thus composed.

† Tylor: Researches into the Early History of Mankind; London, 1870, p. 95.

‡ "Aunque en tierra de Champoton dicen que se hallaron, y que se entendian por ellas, como nosotros por las nuestras."—*Mendieta: Historia Eclesiástica Indiana;* México, 1870, p. 143.—The manuscript was edited by Icazbalceta. Mendieta was a Franciscan friar who went to Mexico in 1554.

§ Formerly also called Pontonchan by the natives.

‖ Brinton: The Ancient Phonetic Alphabet of Yucatan; New York, 1870, p. 7.

the proper sense of the term, that is, representing elementary sounds of the language by written characters. It appears more likely that the figures he gives represent compound sounds, syllabic or partly so, and that they are but fragments of a large repertory of phonetic signs, never reduced to the elements of sound, used by the Mayas of that age. He evidently very positively considered them phonetic and not ideographic, and he could not have been mistaken on such a point, I should suppose. In his endeavor to arrange them according to the analogy of the Latin alphabet, he obscured their real purport, and I think we should reject the whole of his theory of their use in this manner." It afforded me great satisfaction thus to be informed of Dr. Brinton's matured view on the subject—a view which corresponds in its bearing with my own. This communication is published with the writer's consent.

The attempts to interpret Central American glyphs and manuscripts by means of Landa's alphabet have, as stated, thus far chiefly been made by French scholars, more especially by Brasseur de Bourbourg, H. de Charencey and Léon de Rosny. Before speaking of their efforts in that direction, I will briefly refer to the few still existing manuscripts to which a Maya origin is ascribed. The most important among them is the *Dresden Codex*, called a Mexican manuscript by Humboldt, and also reproduced as such in Lord Kingsborough's large work: an error easily detected by a comparison of this codex with the much ruder Aztec pictographs, which, moreover, generally present a different aspect. The Dresden Codex, which was evidently executed by a firm and skillful hand, bears what I might call a Palenquean character, which points to a Central American origin. The analogy can be traced in the outlines of the human and other figures as well as in the accompanying characters, which undoubtedly exhibit a general resemblance to the glyphs seen on the walls of Palenque and of some of the ruined cities of Yucatan. The figures in this codex are generally represented by black outlines; but red, yellow, blue, green and brown colors have also been employed, frequently for producing a back-ground to bring out the figures more distinctly. Nothing is known of the history of the codex, excepting that it was bought in 1739 at Vienna for the Royal Library at Dresden. It has been reproduced on twenty-seven sheets in the third volume of Kingsborough's work; but the original drawing is made on both sides of a piece of maguey paper, twelve feet six inches in length and eight in width, which is folded like a screen, thus resembling an octavo volume eight inches high and three and a half inches wide. The paper is covered on both sides with a thick layer of a whitish substance and carefully polished, on the whole not unlike parchment.*

* Klemm: Allgemeine Cultur-Geschichte der Menschheit; Leipzig, 1847, Bd. v (Die Staaten von Anahuac und das alte Aegyten), S. 133.—"Their books were written on a large sheet, which was folded up and then enclosed between two ornamented boards. They wrote on both sides in columns, following the arrangement of the folds. As for the paper, they made it from the roots of a tree and covered it with a white varnish, upon which one could write very well."—*Landa: Relation etc.*, p. 44.—A similar description is given by Peter Martyr. Such books were called *analtés*.

Another Maya manuscript is preserved in the National Library at Paris. It was erroneously designated as *Codex Mexicanus No.* 2; but M. Léon de Rosny found it to be of Maya origin, and named it *Codex Peresianus*, having discovered the name "Perez" written on a piece of the envelope containing the manuscript. It has been published by that gentleman in a work which I have never seen ("Archives Paléographiques de l'Orient et de l'Amérique").*

The *Codex Troano* is the third important manuscript deserving mention in this place. It was called after the owner, Don Juan de Tro y Ortolano, a descendant of Cortés, and professor of paleography at Madrid. Brasseur saw it in 1866, while on a visit in the capital of Spain, and the possessor permitted him to copy this valuable document, which was published in 1869–70 at Paris, under the auspices of the Scientific Mexican Commission as "Manuscrit Troano. Études sur le Système Graphique et la Langue des Mayas, par M. Brasseur de Bourbourg."† This codex resembles in appearance that preserved in the Dresden Library, being many times folded so as to form a kind of volume. The designs, however, executed in black, red, blue and brown on both sides of the paper, are much ruder than in the Dresden manuscript, a circumstance which has induced Brasseur to regard it as much older than it evidently is.

It has been intimated that the Fejérváry manuscript, to which allusion was made, might be a Maya production. I must confess that the analogy does not seem to me sufficiently marked for warranting such a supposition.

Brasseur de Bourbourg was among the first to make use of Landa's key for the purpose of decipherment, applying it to the Dresden Codex and the Mexican Codex No. 2 (Codex Peresianus), which are written in the same characters. "Notwithstanding the short time during which they were in our hands," he observes, "we have found in them all the signs of the calendar reproduced by Landa, and about a dozen phonetic signs. We have thus *read* a certain number of words, such as *ahpop*, *ahau*, etc., which are common to most Central American languages. The difficulty we have thus far encountered in identifying the other signs has led us to believe that they belong to an antiquated language, or to dialects differing from the Maya or the Quiché. Yet, nevertheless, a more attentive examination of the Dresden Codex may cause us to change again that view."‡

Brasseur's well-known attempt to decipher a portion of the Codex Troano must be considered a total failure, and it is almost to be regretted that he ever published his "Études," which undoubtedly have greatly injured his literary reputation by lessening the confidence in his deductions in general. Indeed, it is painful to follow the obvious delusions to which he abandons himself in his inter-

* De Rosny; Essai sur le Déchiffrement de l'Écriture Hiératique de l'Amérique Centrale; Paris, 1876, p. 6.

† Two volumes in folio.

‡ De Landa: Relation etc., p. IV.

pretation. The document, he thinks, combines phonetic, monosyllabic and alphabetic elements, mixed with figurative and symbolic characters,* and relates to geological events, such as submergence and rising of land, convulsions, volcanic eruptions, and similar phenomena, which, in remote ages, modified the shape of the American continent. The improbability of this explanation is so glaring that Brasseur was, perhaps, the only person that believed in it. "This writer," says Bancroft, "after a profound study of the subject, devotes one hundred and thirty-six quarto pages to a consideration of the Maya characters and their variations, and fifty-seven pages to the translation of a part of the Manuscript Troano. The translation must be pronounced a failure, especially after the confession of the author in a subsequent work that he had begun his reading at the wrong end of the document,—a trifling error perhaps in the opinion of the enthusiastic Abbé, but a somewhat serious one as it appears to scientific men."†

There can be little doubt that the characters in the Codex Troano bear analogy to those given by Landa; but they evidently belong to an earlier period than the latter, which had become modified in the course of time. A very short examination of the Troano manuscript enabled me to identify the so-called letter C (q?), the syllable CA (?), and the signs for the days MANIK, AHAU, EZANAB, BEN and YMIX (see page 60). Elementary signs, or at least what appear to be such, occur frequently in this codex, but also combinations of them, the unraveling of which, if possible, would require a long-continued careful study.

The Count Hyacinthe de Charencey has also made the Codex Troano the subject of his inquiry, and has published in a pamphlet his opinion in relation to it. He totally rejects Brasseur's interpretation, admitting only that the Abbé is right in his explanation of the signs representing numbers. A dot stands for a unit; a bar expresses the number five; two bars are equivalent to the number ten; a bar with two dots to seven, etc. But even this idea, he says, did not originate with Brasseur, who thus failed in his attempted translation "to enrich our knowledge of ancient America with a single new discovery."‡ M. de Charencey points out a certain order in the succession of the signs of the days in the Troano manuscript, and hence considers it as a document of cabalistical or astrological purport. "These registers," he observes, "have no reference to the ante-diluvian or pre-glacial history of the new world, as the Abbé Brasseur supposed, but they are simply combinations of numbers and computations, either

* "Ce document est phonétique, monosyllabique et alphabétique à la fois. Il est mêlé de caractères figuratifs et symboliques."—*Brasseur de Bourbourg: Manuscrit Troano*, tom. I, p. 41.

† Bancroft: Native Races etc., vol. ii, p. 780.—This caustic remark on the part of Mr. Bancroft, it should be said, is followed by words conveying his high appreciation of the Abbé's zeal in the cause of American archæology. "It will be long," he says, "ere another shall undertake with equal devotion and ability the well-nigh hopeless task."

‡ De Charencey: Recherches sur le Codex Troano; Paris, 1876, p. 6.

astrological or astronomical, and more or less complicated. To offer a key at present would appear a premature proceeding."*

There appeared in 1876 and 77, at Paris, the first numbers of a richly illustrated and costly folio work by M. Léon de Rosny, entitled "Essai sur le Déchiffrement de l'Écriture Hiératique de l'Amérique Centrale." The portion of the work which has thus far appeared embraces a well-written introduction and an analysis of the signs used in the manuscripts of Maya origin, but presents, as far as I could see in the short time which I was permitted to bestow on its examination, no additional efforts in the line of decipherment. It produces a rather comical impression that M. de Rosny criticises with some severity the achievements of De Charencey, his colleague in the same field of investigation. De Rosny gives on Plate II of his work a very defective representation of the Palenquean Group of the Cross, including the right slab, which shows characters absolutely unlike those on the original in the Smithsonian building. I cannot understand M. de Rosny's motive for introducing in a work of strictly scientific character an illustration totally different from what it purports to represent.

Mr. William Bollaert made an attempt to decipher by means of Landa's signs a plate of the Dresden Codex, but without the desired success, for he says in a letter addressed in 1875 to M. de Rosny: "I did not find Landa's alphabet of the use I hoped for."†

After the foregoing it hardly will be necessary to point out the total insufficiency of the results obtained by those savants who have tried to translate the existing manuscript records of Maya origin. The key applied to that purpose has failed to render the desired service, though the close connection between Landa's signs and those of the codices in question is undeniable. The Yucatecs and Central Americans, it appears probable, employed in their writing certain characters as equivalents for sounds, perhaps syllabic, and at the same time, possibly to a great extent, conventional figures imparting a definite meaning. I cannot reconcile myself to the idea that the characters used by those comparatively civilized nations should represent nothing beyond a somewhat systematized picture-writing, while the neighboring Mexicans, as has been shown, already had made some advances toward phonetization. On the other hand, I strongly doubt whether the Mayas and kindred races ever went so far as to express the elementary sounds of their speech by corresponding signs—in short, whether they possessed a written language in our sense. In dilating on the Yucatec characters, Bishop Landa, I repeat, evidently ventured upon a topic with which he was not sufficiently familiar. If, however, contrary to my expectations, they should in future prove to be of greater use than they have thus far been, I shall with great satisfaction modify my present opinion.

---

* De Charencey: Recherches sur le Codex Troano; p. 13.

† De Rosny: Essai sur l'Écriture Hiératique etc., p. 13.

But, supposing the Maya manuscripts *had* been translated, in part or entirely, through Bishop Landa's key, it would still be a difficult, if at all practicable, task to interpret the glyphs sculptured on the tablets of Palenque, which evidently are of much higher antiquity than those written records. Admitting for a moment that both, the sculptured glyphs and written characters, were contemporaneous, the former most probably would differ in shape from those traced by the scribe, who, we may suppose, performed his work rapidly, and employed abbreviations and other conventional modifications not used by the artist who chiseled them in bas-relief on stone.* These two kinds of characters, however, are *not* contemporaneous, the sculptures being, in all likelihood, many centuries older than the manuscripts, and during the period intervening between the execution of both, additional alterations in the shape of the written signs may have taken place. Yet the difficulties just mentioned are of subordinate importance, if those arising from changes in the *language* are taken into consideration. I have elsewhere stated as my belief that the Maya tongue or a kindred dialect was spoken by the builders of Palenque, and, as a consequence, I hold that this language underlies the signs exhibited on the tablets of the ruined city. If we ascribe to these tablets an antiquity of a thousand years—which is probably a moderate estimate—Landa's key, provided that it really were applicable to the Maya language as spoken about three hundred years ago, would fail to disclose the meaning of the Palenquean glyphs, because they express the Maya of a much earlier period, and therefore differing from that spoken at the time of the conquest.† But if, as has been maintained, Palenque was built

* In consideration of their shape M. Aubin has designated these characters as "calculiform." It does not appear to me that this definition admits of a general application.

† I cannot abstain from quoting here, for the sake of illustration, Sir Charles Lyell's observations on the mutability of languages:—"None of the widely spoken languages of modern Europe is a thousand years old. No English scholar who has not specially given himself up to the study of Anglo-Saxon can interpret the documents in which the chronicles and laws of England were written in the days of King Alfred, so that we may be sure that none of the English of the nineteenth century could converse with the subjects of that monarch if these last could now be restored to life. The difficulties encountered would not arise merely from the intrusion of French terms, in consequence of the Norman conquest, because that large portion of our language (including the articles, pronouns, etc.) which is Saxon has also undergone great transformations by abbreviation, new modes of pronunciation, spelling, and various corruptions, so as to be unlike both ancient and modern German. They who now speak German, if brought into contact with their Teutonic ancestors of the ninth century, would be quite unable to converse with them, and, in like manner, the subjects of Charlemagne could not have exchanged ideas with the Goths of Alaric's army, or with the soldiers of Arminius in the days of Augustus Cæsar. So rapid indeed has been the change in Germany, that the epic poem called the Nibelungen Lied, once so popular, and only seven centuries old, cannot now be enjoyed, except by the erudite.

"If we then turn to France, we meet again with similar evidence of ceaseless change. There is a treaty of peace still extant a thousand years old, between Charles the Bald and King Louis of Germany (dated A. D. 841), in which the German king takes an oath in what was the French tongue of that day, while the French king swears in the German of the same era, and neither of these oaths would now convey a distinct meaning to any but the learned in these two countries. So also in Italy, the modern Italian cannot be traced back much beyond the time of Dante, or some six centuries before our time."—*Antiquity of Man;* fourth edition, London and Philadelphia, 1873, p. 508.

by the Toltecs after their withdrawal from Anáhuac in the eleventh century of our era, the glyphic inscriptions, of course, must be referred to a later period. Though I hardly believe in a very high antiquity of the ruins of Central America, I deem it at the same time probable that there existed a pre-Toltecan civilization in that part of the continent. The traditions relating to such a condition, and, indeed, the glyphs themselves, corroborate that view.

FIG. 13.

GLYPHS ON THE LEFT TABLET IN THE TEMPLE OF THE CROSS.

(After Waldeck).*

* Inserted for the sake of comparison.

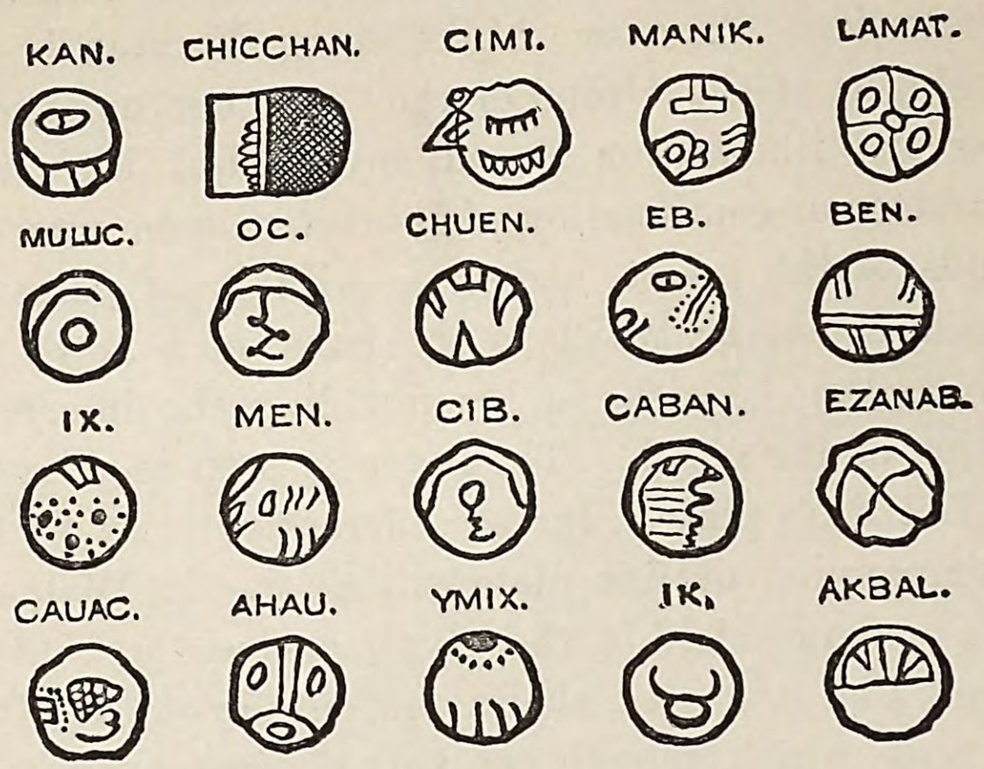
M. de Charencey has made some attempts to decipher Palenquean glyphs. He gives in the "Actes de la Société Philologique" (Tome 1er, No. 3, Mars 1870) his "Essai de Déchiffrement d'un Fragment d'Inscription Palenquéenne." His exposition is also contained, in an abbreviated form, in Dr. Brinton's "Ancient Phonetic Alphabet of Yucatan." He selected for translation two glyphs of the Group of the Cross, but unfortunately based his experiment upon the illustration accompanying Del Rio's report. He first considers the character or combination of characters seen immediately above the child in the hands of the priest, and tries with great pains to show that it expresses the word *Hunab-ku*, which is the name of a Maya god. The worst feature of the proceeding consists in his founding the interpretation upon an incorrect delineation of the glyph. The latter is seen in Fig. 6—the reproduction of a part of Del Rio's plate. It was differently drawn by Catherwood, as a glance at the accompanying outline plate will show. In Waldeck's delineation, Fig. 7, the middle oval or shield of the glyph encloses a kind of Maltese cross instead of dots, and Fig. 8, finally, shows the outline of the glyph drawn after Charnay's photograph, which, though not very distinct, exhibits it under a form certainly differing from that underlying De Charencey's interpretation. I cannot here follow his somewhat complicated analysis of the component parts of the character; but I may state that, according to my conception, he has failed in identifying a single one of these parts with one of Landa's signs, and, further, that his attempts to prove them to be variations of the latter appear to me equally unsuccessful.

The second figure he tries to interpret is the uppermost in the single row behind the priest. This glyph pertains to the Smithsonian slab, and was copied by Castañeda when the three tablets forming the Bas-relief of the Cross were still in place. The outline plate gives a correct drawing of it, which differs considerably from the same figure in Del Rio's plate (Fig. 6). A comparison will show in how far both designs are unlike each other. M. de Charencey thinks the glyph expresses the name *Kukulcan*, which is that of a Yucatec deity corresponding to the Quetzalcohuatl of the Mexicans. In this case the interpreter's analysis, if possible, is still less satisfactory than in the former; but I could not state the reasons for my opinion without entering into details incompatible with the proposed extent of this publication.

In consideration of the foregoing statements it hardly can be expected that I should express any hope as to the decipherment of the Palenquean glyphs by the means at present at our command. Landa's key will not suffice, and the prospects for a future solution of the difficulty are rather gloomy, unless some new discovery is made which will afford us a more efficient help for obtaining that most desirable result. Indeed, Brasseur himself seems to have been looking out for such coming assistance in alluding to the possible "discovery of one of those

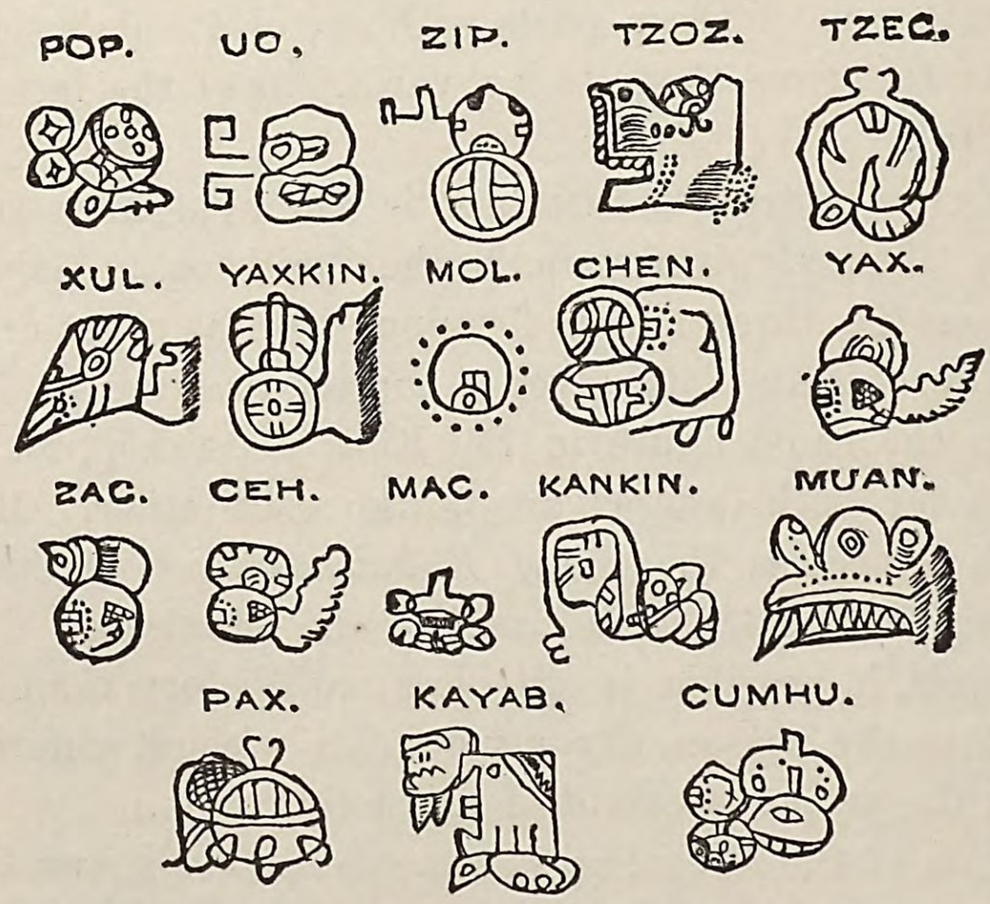
manuscripts which the Mayas, like the Egyptians, placed into the coffins confining the corpses of their priests." *

Fig. 14.



DAYS OF THE MAYA CALENDAR (LANDA).

Fig. 15.

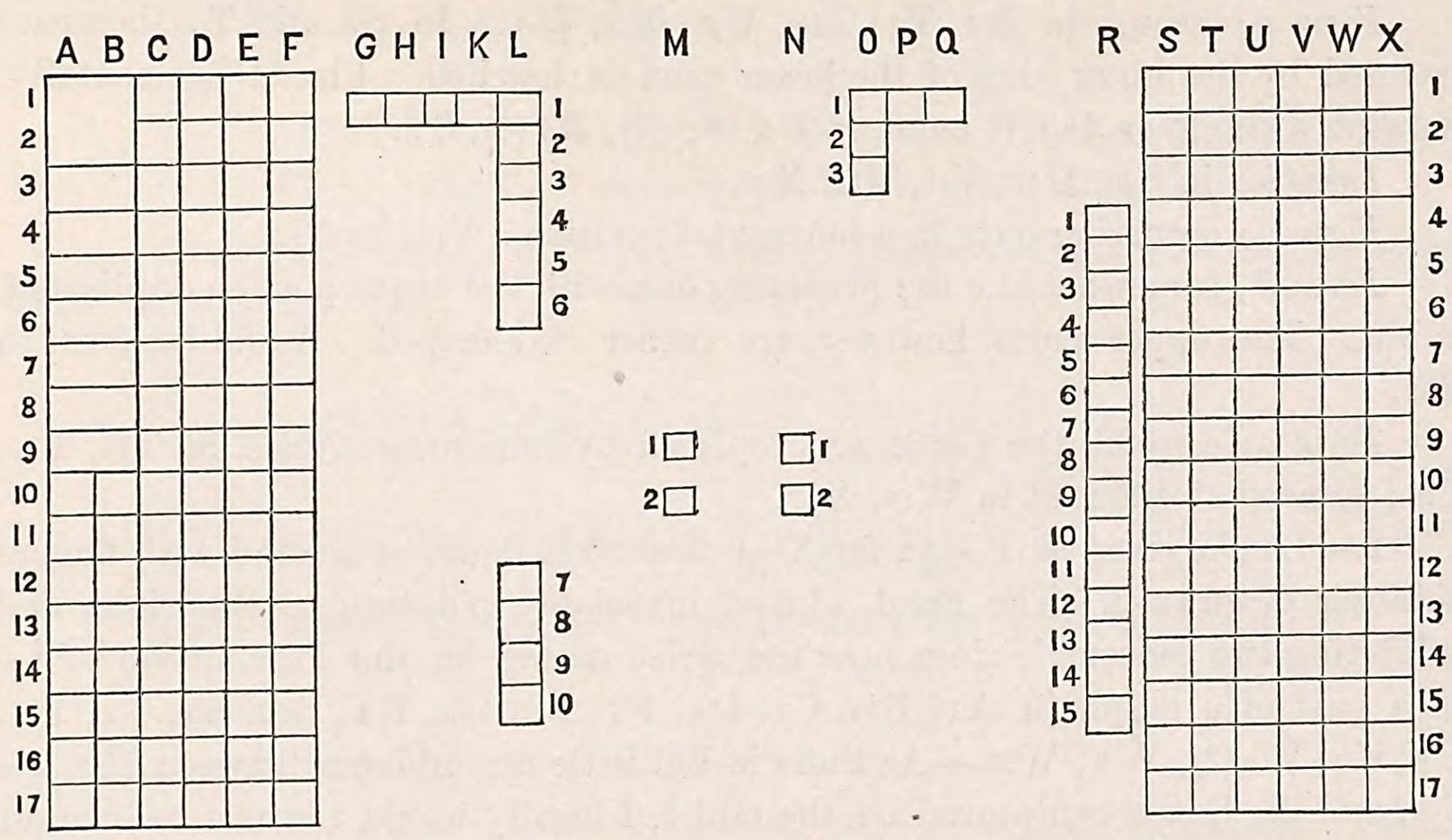


MONTHS OF THE MAYA CALENDAR (LANDA).

* Landa: Relation etc., p. v.—Only a short time ago I learned that a catechism written in the Maya characters, and accompanied by a Spanish translation, has been lately discovered in an old library in Spain. The matter, however, is kept secret for the present. These facts were stated by M. Alphonse Pinart in a letter addressed in May, 1879, to Mr. Albert S. Gatschet, of Major Powell's survey.

The affinity between Landa's signs and the glyphs on the Palenquean slabs is undeniable, and certainly goes far to show that the former are the remnants of a graphic system in vogue among the Mayas and kindred nations in past centuries. This affinity, furthermore, leads me to the inference that the Mayas and the builders of Palenque, if not the same people, were at least closely related to each other.

FIG. 16.



INDEX DIAGRAM OF THE GLYPHS ON THE TABLET OF THE CROSS.

I will now proceed to point out such analogies as I discovered between both kinds of characters by means of the annexed diagram (Fig. 16), in which the places of the glyphs shown in the outline plate are indicated by small squares, the vertical and horizontal rows being respectively marked with letters and numbers. The method here adopted, though somewhat slow in its application, is so simple that any further explanation would appear superfluous. In some cases, Landa's signs will be found identical with glyphs or parts of glyphs sculptured on the Palenquean slabs, while in other instances a more or less distinct resemblance can be traced. In the following analysis, which doubtless might be further elaborated, Landa's designations for his signs, whatever their true significance may be, have been retained.

Letters and Syllables.

1. —A form resembling the upper part of H; always in connection with a lower part exhibiting several variations:

a b c d e

Form a; occurs in R4, T7, T15, U16, V5, W4. In S8 and T1 the space enclosed by the inner ring of the lower part is hatched. Placed horizontally, showing a single or double band, in F9, S17 (?), R7 (?), S1.

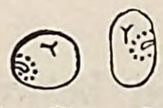
Form b; in S16, U12, V6, V16, X3.

Form c; occurring only in a horizontal position: V17, S9 (?).

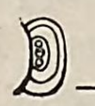
Form d; somewhat like the preceding one, with the upper portion duplicated, in V15. The upper parts, however, are rather leaf-shaped. A similar form in R12.

Form e, in which the bands are replaced by concentric circles, in T11, T13, T16; somewhat different in W17, X17.

2.—Landa gives as a sign for X an imperfect figure of a hand with fingers pointing downward. The hand, almost invariably pointing to the right and exhibiting two concentric rings near the wrist, occurs on the Palenquean tablet as a part of a glyph in A7, B11, C3, D4, F7, L5, O3, R4, R12, S1, T7, T15, U6, U16, V11 (?), W3, W17.—As there is but little resemblance between Landa's sign and the hands sculptured on the tablet, I hardly would venture to suggest that both were intended to convey the same meaning.

3.  —Two forms resembling Landa's CU, in B3 (large, partly hatched), C5, C7, F6, U2, U4, U8, U9, U11 (?), V14, W2, X12, X14.

4. —This combination, not unlike the syllable KU, occurs in T9 and V2.

5.  —A figure bearing a distant resemblance to HA. M. de Charencey, in his attempt to translate the glyph above the figure of the child (after Del Rio's design, Fig. 6), makes it serve for H. It occurs in S5, S7, S11, S13, V4, V9, X7, and less distinctly in several other glyphs.

Among the characters of the Yucatec alphabet are two figures of heads, one of them evidently human and expressing PP, according to Landa; the other, more distinctly traced, emits breath from the mouth, and is said to represent a form of the letter X. Heads of men, and also of animals, occur frequently on

the Palenquean bas-relief. They show profiles turned toward the left, and in some cases protruding tongues. I think it would be unsafe for the present to connect these sculptured heads with those of the alphabet.

Days.

1. —KAN, in T8, U17, X10.

2. —Resembling LAMAT, in C17 (?), W5, S10.

3. —CHUEN, in B6, D1, D5, D13, E5, E10, F15, R2, S6, S12, S15, U3, V13, W1, W15, X6, and not quite as plainly in some other characters.

4. —BEN, always connected with (portion of the sign for the month POP), in R10, R15, T9.

5. —EZANAB, in M1 (?), U7.

6. —Resembling AHAU, in A16, B8, D3 (?), T17.

7. —YMIX, in E2, D6; a somewhat different form in X5.

Months.

1. —Small part of POP, always combined with , in R10, R15, T9.

2. —Resembles the principal part of PAX; occurs, though with modifications, in AB1, 2, B4, B5, C6, C14, D9, D10, D14, D15, E6, E11, E16, F5, F16, R3, T6, T12, U4, U9, U14, V3, V8, V14, W2, W7, W12, X1, X12, X15.—There is a difference in the number of the vertical bars within the semicircular space, and in some cases the bars are hatched. The lower part of the figure likewise displays some diversity in its shape. These variations, it may be assumed, were intended to modify the meaning of the glyphs.

The analogies which I have shown to exist between Landa's signs and the glyphs on the Palenquean bas-relief are in so far of interest as they seem to explain, if nothing else, at least the *general* purport of the latter. Considering that signs, or parts of signs, for months, and more particularly such as denote days, occur, in conjunction with numbers expressed by bars and dots, on the Tablet of the Cross, I venture to suggest that its inscription constitutes a *chronological* record of some kind. The central group of figures probably illustrates

one of the events narrated or indicated by the surrounding glyphs. M. de Charencey thinks we have to recognize, in all probability, in the Palenquean inscriptions litanies sung by the priests in honor of the Maya gods.* In advancing this opinion he evidently had the sacred character of the temple in view; but I must confess that I cannot reconcile the chanting of litanies with the frequent signs bearing on the division of time, unless, indeed, the glyphs in question were intended to form a kind of calendar serving to regulate the succession of those religious rites.

Some of the monolithic idols or statues at Copan, in Honduras, which have been described by Mr. Stephens, bear glyphs obviously resembling in general appearance those of Palenque—a circumstance from which a relationship between the ancient inhabitants of these two districts may be inferred. At any rate, their civilization must have been essentially the same. For comparisons I have to refer to Stephens's work on Central America, which contains a full account of the ruins of Copan, accompanied by many illustrations. One of them represents the flat top of a stone altar, six feet square, on which are sculptured thirty-six glyphs, arranged in rows as on the Palenquean tablets. This view is given on page 141 of the first, and again on page 454 of the second volume, in this instance in connection with a small fragment of the Dresden Codex, inserted by Stephens in order to show the resemblance of its characters to those of Palenque and Copan. In doing so, he certainly manifested his keen faculty of discrimination; but his inference "that the Aztecs or Mexicans, at the time of the conquest, had the same written language with the people of Copan and Palenque" arose from the delusion, shared by Humboldt, Kingsborough and others, of seeing in the Dresden Codex a manuscript of *Mexican* origin.

Though there is undeniably much similarity in the general character of the glyphs of Copan and Palenque, the difference in their details is very striking —indeed so great as to render it plausible that a long period intervened between the building of the two cities, during which considerable changes in the shape of the characters took place. In fact, some archæologists, taking into consideration the peculiarities of the styles of architecture and sculpture in both cities, regard Copan as the older of the two.† By these statements, however, I merely intend to convey a suggestion, and not a definite opinion; for there is a possibility that the characters employed by the ancient people of Copan were originally more or less different from those in use among the builders of Palenque.

---

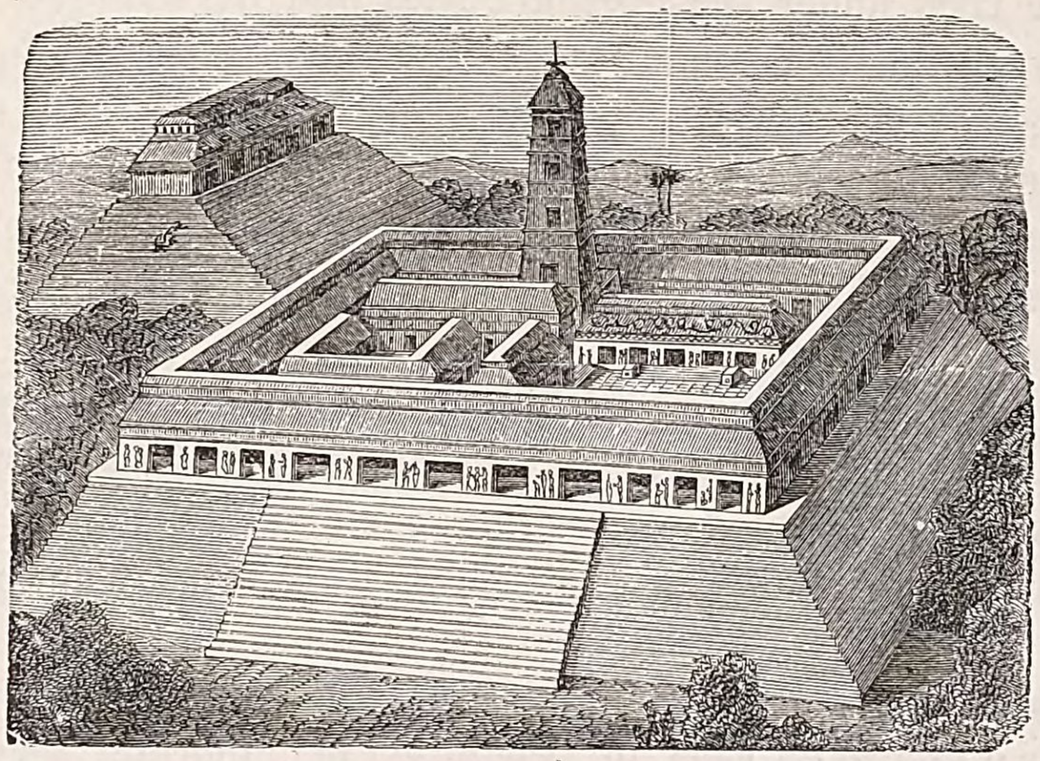
* De Charencey: Essai de Déchiffrement etc., in: Actes de la Société Philologique, Tom. I, No. 3, Mars 1870, p. 50.

† "The ruins of Copan, and the corresponding monuments which I examined in the valley of the Chamelicon, are distinguished by singular and elaborately carved *monoliths*, which seem to have been replaced in Palenque by equally elaborate *basso-relievos*, belonging, it would also seem, to a later and more advanced period of art."—*Squier: The States of Central America;* New York, 1858, p. 241.

APPENDIX.

NOTES ON THE RUINS OF YUCATAN AND CENTRAL AMERICA.

FIG. 17.



RESTORATION OF THE PALACE AND THE TEMPLE OF THE THREE TABLETS AT PALENQUE.
(After Armin).

Mr. STEPHENS is not inclined to ascribe a very high antiquity to the ruins of Yucatan and Central America, which he has so carefully examined and described, and his strong good sense and total abstinence from visionary speculations entitle his inferences to the highest regard. He arrives at the conclusion that the buildings in question are not the work of people who have passed away and whose history has become unknown, but that, contrary to all previous speculations, they were constructed by the races who occupied the country at the time of the Spanish invasion, or by their more or less remote ancestors. Yet he admits that some of them may have been in ruins and deserted before the arrival of the European conquerors. He opposes all extravagant notions with regard to the age of the buildings on physical as well as on historical grounds, some of which may with propriety be adduced in this place. The condition of the ruins themselves militates against their high antiquity. "The climate and rank luxuriance of soil are most destructive to all perishable materials. For six

months every year exposed to the deluge of tropical rains, and with trees growing through the doorways of buildings and on the tops, it seems impossible that, after a lapse of two or three thousand years, a single edifice could now be standing."*

He further quotes in support of his view the statements of the veracious Bernal Diaz del Castillo, who shared in the three successive expeditions to Yucatan under Hernandez de Córdova, Grijalva and Cortés, in the course of which he saw many occupied buildings of lime and stone (temples, etc.), corresponding in character with the ruins now met with in the same districts. Speaking of a small temple on the Island of Cozumel, he thinks there is no violence in the supposition that it is identical with the one in which the Indians performed their rites under the eyes of Cortés and his followers, a practice at once checked by the fanatical conquistador, who gave orders to break and eject the idols, and to convert the heathenish sanctuary into a Christian chapel.† Mr. Stephens also derives much assistance in upholding his opinion from the diary of Grijalva's chaplain, Juan Diaz, who describes the temples and inhabited towns seen in the course of the expedition on the Island of Cozumel and on various points of the coast of Yucatan.‡

While Mr. Stephens was in Mérida, the capital of Yucatan, Don Simon Peon, a prominent citizen of that place, and proprietor of the district in which the ruins of Uxmal are situated, showed him the first title papers to that estate. One of the documents bears as date the 12th of May, 1673, and is a royal instrument by which four leagues of land from the buildings of Uxmal to the south, one to the east, another to the west, and another to the north are transferred to the regidor Don Lorenzo de Evia, in recognition of important services rendered to the crown. In the preamble some of the regidor's grounds for soliciting the royal favor are set forth, among them the following:—He wished to stock the said places and meadows with horned cattle, by which proceeding no injury could result to any third person, but, "*on the contrary, very great service to God our Lord, because with that establishment it would prevent the Indians in those places from worshiping the devil in the ancient buildings which are there, having in them their idols, to which they burn copal, and from performing other detestable sacrifices, as they are doing every day notoriously and publicly.*"

The regidor, however, was importuned by an Indian, named Juan Can, who claimed the lands on account of his being a descendant of the Indians to whom they formerly belonged, and he produced papers and maps in support of his request. In order to avoid trouble, Don Lorenzo de Evia paid to the Indian the

---

* Stephens: Central America, etc.; vol. ii, p. 443.

† Stephens: Yucatan; vol. ii, p. 374.—The incident is related by Bernal Diaz in his "Historia Verdadera de la Conqvista de la Nueva-España;" Madrid, 1632, cap. xxvii, fol. 19.

‡ I shall refer to this diary on a succeeding page.

sum of seventy-four dollars, upon which the latter formally relinquished his rights to the land. These details are mentioned in a document dated December 3rd, 1687. Finally, the regidor took formal possession of the tract, as shown by the following writ, beginning: "In the place called the edifices of Uxmal and its lands, the third day of the month of January, 1688," etc., and closing with these words: "In virtue of the power and authority which by the same title is given to me by the said governor, complying with its terms, I took by the hand the said Lorenzo de Evia, and he walked with me all over Uxmal and its buildings, *opened and shut some doors* that had several rooms,* cut within the space some trees, picked up fallen stones and threw them down, drew water from one of the aguadas† of the said place of Uxmal, and performed other acts of possession."‡

From the above extracts it may be concluded that less than two hundred years ago the Indians still performed their religious rites in the buildings of Uxmal, and that the latter were provided with doors which could be opened and shut, a fact in itself indicative of late occupancy. Indeed, Mr. Stephens, who was a lawyer before he became an explorer, thinks these proofs would be good evidence in a court of law.

Mr. Stephens mentions another curious circumstance in support of his view. The cura of Chemax (near Valladolid, Yucatan) showed him a collection of aboriginal relics taken from one of the stone mounds situated on his hacienda at Kantunile. In excavating the mound for obtaining stone to be used in building, the Indian laborers discovered a sepulchre containing three skeletons in a far advanced state of decay, and belonging, as it appeared, to a man, a woman and a child. Two large clay vessels with covers were found in the sepulchre, one of them enclosing Indian ornaments, consisting of beads, stones, and two shells skillfully carved in bas-relief; the other vessel was filled with obsidian arrow-heads, on top of which lay *a rusty penknife with a rotten horn handle.* This penknife, undoubtedly of European manufacture, must have been obtained from the Spaniards, and, being considered an object of high value by the owner, it was placed in his tomb, in accordance with aboriginal custom. Mr. Stephens was anxious to procure these memorials, but failed in the attempt.§

In 1861, while on a visit in Yucatan, Mr. Stephen Salisbury, Jr., saw at the hacienda of Don Manuel Casares, called Xuyum, fifteen miles northeast of Mérida, a number of cerros, or mounds, and the ruins of several small stone structures built on artificial elevations; and "his attention was called to two sculptured heads of horses which lay upon the ground in the neighborhood of some ruined buildings. They were of the size of life, and represented, cut from

* Probably meaning "that led to several rooms."

† Artificial water-reservoirs.

‡ Stephens: Yucatan; vol. i, p. 322.

§ Ibid., vol. ii, p. 341.

solid limestone, the heads and necks of horses with the mane clipped, so that it stood up from the ridge of their necks like the mane of the zebra. The workmanship of the figures was artistic, and the inference made at the time was, that these figures had served as bas-reliefs on ruins in that vicinity. On mentioning the fact of the existence of these figures to Dr. Carl Hermann Berendt, who was about to revisit Yucatan, in 1869, he manifested much interest in regard to them, and expressed his intention to visit this plantation when he should be in Mérida. But later inquiries have failed to discover any further trace of these figures. Dr. Berendt had never seen any representation of horses upon ruins in Central America, and considered the existence of the sculptures the more noteworthy from the fact that horses were unknown to the natives till the time of the Spanish discovery. The writer supposes that these figures were sculptured by Indians after the conquest, and that they were used as decorations upon buildings erected at the same time and by the same hands."*

I may allude here to the curious account of an equine statue, made of stone and mortar, which the Itzas of Lake Peten, in Guatemala, had placed in a temple, worshiping it under the name of *Tzimin-chak* as a deity presiding over thunder and lightning, in memory of a disabled horse left behind by Cortés during his march to Honduras. The details are given by Prescott, Stephens, Morelet, Bancroft, and other modern authors.† These Itzas had left their homes in Yucatan at some time during the fifteenth century, consequently not long before the conquest, and, moving slowly southward through uninhabited districts, they finally came to the lake, where they remained and built a city on an island surrounded by its waters. The city was called Tayasal, and contained many whitewashed houses and temples, which the Spaniards, on their approach, could distinguish at a distance of more than two leagues.‡ "These edifices," says Mr.

---

* Salisbury: The Mayas, etc.; Worcester, 1877, p. 25.

† After the narrations contained in Cogolludo's "Historia de Yucathan," Madrid, 1688, lib. i, cap. xvi, p. 54 etc.; and in a work by Villagutierre, entitled "Historia de la Conquista de la Provincia de el Itza," Madrid, 1701, lib. ii, cap. iv, p. 100 etc.—Concerning the word *Tzimin-chak* M. Morelet observes: "Historians are silent touching the etymology of this glorious designation; they only inform us that the new divinity, by some strange attribution, presided over storms and directed the thunder." (Travels, p. 197). To this remark the following note (by E. G. Squier) is added in the translation: "The name *Tzimin-chak* is derived from *tzimin*, the tapir or *danta*, and *chak*, white; *i. e.*, the *white tapir*. The tapir is the largest indigenous animal of Yucatan, and the only one with which the Itzas could compare the horses of the conquerors. The tapir was, moreover, a sacred animal among all the Central American nations. Cortés's horse was probably white; and as he was brought among the Indians by people who had fire-arms, it is not surprising that the new god was in some way connected in their minds with the phenomena of thunder and lightning, themselves the concomitants of storm." According to Brasseur *chaac* or *chác* means lightning, thunder, storm and rain, being also the generic name of the divinities governing waters and harvests (Landa's Relation, p. 485). Villagutierre translates *Tzimin-chak* by *Cavallo del Trueno*, ò *Rayo*.

The Indians of Peten, I was informed by Dr. Berendt, have preserved the recollection of the statue, and even show it, or its remains, at the bottom of the lake. He was rowed to the spot, but could not discover anything resembling the effigy of a horse.

‡ Bernal Diaz: Historia Verdadera etc.; cap. clxxviii, fol. 201.

Prescott, "built by one of the races of Yucatan, displayed, doubtless, the same peculiarities of construction as the remains still to be seen in that remarkable peninsula."* The Itzas were permitted to live unmolested and according to aboriginal custom in their chosen retreat until the year 1697, when they were attacked by a force under Don Martin de Ursua, and compelled to submit to Spanish rule. "The conquest," says Stephens, after having given an account of the buildings formerly seen on the island, "took place in March, 1697, and we have the interesting fact, that but about one hundred and forty-five years ago,† within the period of two lives, a city existed occupied by unbaptized Indians, precisely in the same state as before the arrival of the Spaniards, having kues, adoratorios, and temples of the same general character with the great structures now scattered in ruins all over that country. This conclusion cannot be resisted except by denying entirely the credit of all the historical accounts existing on the subject."‡ The island, however, is not very large, and hence the city cannot have been extensive. "The Island of Peten itself," says M. Morelet, who visited the locality, "is oval in shape, rising by a gentle slope from the water, and terminating in a platform of calcareous rocks. It is not large; one may make the circuit of it in a quarter of an hour. Its surface is covered with small stones, which are, doubtless, the remains of ancient edifices." § The town of Flores now occupies the site of the aboriginal buildings.

In 1869, Dr. C. H. Berendt discovered, not far from the mouth of the Tabasco or Grijalva River, the site of an ancient town, supposed by him to be that of Cintla, where in 1519 a bloody battle was fought between the natives and the Spanish forces under Cortés, then on their way to Mexico.|| The ruins were buried in the thick and fever-haunted forests of the marshy coast, and unknown until then to the Indians themselves. "In the course of the excavations which I caused to be made, antiquities of a curious and interesting character were laid bare. Prominent among these ruins, and presenting a peculiar feature of workmanship, are the so-called teocallis, or mounds, which here are built of earth and covered at the top and on the sides with a thick layer of mortar, in imitation of stone-work. On one of these mounds I found not only the sides and the platform, but even two flights of stairs constructed of the same apparently fragile, but yet enduring material. One of the latter was perfectly well preserved. I likewise saw clay figures of animals, covered with a similar coating of mortar or plaster, thus imitating sculptured stone, and retaining traces of having been painted in various colors. The reason for this singular use of

---

* Prescott: Conquest of Mexico; vol. iii, p. 291.

† Mr. Stephens wrote this about 1842.

‡ Stephens: Yucatan; vol. ii, p. 200.

§ Morelet: Travels etc.; p. 206.—The original says: "On peut en faire le tour en un quart d'heure, sans déployer beaucoup d'activité."

|| Bernal Diaz: Historia Verdadera etc: cap. xxxiii, xxxiv, fol. 22 etc.

cement probably is, that in the alluvial soil of this coast no stones occur within a distance of fifty miles and more from the sea-shore; stone implements, such as axes, chisels, grinding-stones, obsidian flakes, etc., which occasionally are also found, can have been introduced only by trade. The pottery and the idols made of terra-cotta show a high degree of perfection. Regarding the period down to which such earthenware was made, a broken vase, disinterred from one of the mounds in my presence, may give a clue. Its two handles represent Spaniards, with their European features, beard, Catalonian cap, and *polainas* or gaiters."* Supposing Dr. Berendt had not found that vase, which undoubtedly was made after the conquest, and, moreover, had been ignorant of the details of that event, he might have been led into the error of attributing a very high antiquity to the ruins discovered by him.

On the other hand, it is natural to suppose that many of the buildings in Yucatan and the neighboring countries were deserted, and in a more or less dilapidated state, when the Spaniards appeared upon American soil. These structures were erected at different periods, and not age alone, but various other causes, such as defeat in war, or superstitious fear arising from some calamity, and kindred motives, may have led to the desertion of many long before the conquest. It is to be regretted that the early authors, to whom we are indebted for the first accounts of these buildings, generally mention them superficially and incidentally, in connection with other matters deemed of greater importance to them, and thus fail to give such details as might serve to impart positive information. The buildings, on the whole, were either temples or dwellings for princes and other persons of rank. The common people probably lived near these structures in habitations of perishable character, all traces of which have long disappeared. Such an assemblage of substantial and frail erections may have constituted a Yucatec city in olden times.† Historical evidence is not

---

* Berendt: Remarks on the Centres of Ancient Civilization in Central America (read before the American Geographical Society, July 10, 1876); New York, 1876, p. 8.

† It appears, nevertheless, that in some parts of Yucatan the people constructed their dwellings of stone. Juan Diaz, the chaplain who accompanied and afterward described Grijalva's expedition to Yucatan, gives some information on the subject. Upon landing near a village on the Island of Cozumel, Grijalva met with a favorable reception on the part of the Indians. They conducted the commander with ten or twelve of his companions to a hall, where they supplied the strangers with food. This hall, the report says, was built of closely-fitting stones and covered with straw. The Spaniards afterward "entered the village, all houses of which were built of stone. Five of the buildings, surmounted by turrets, were particularly well constructed. The base of these edifices is very large and massive; the upper structure, however, very small. They appear to have been built a long time ago; but there are also new ones. This village or town was paved with concave stones, and its streets sloped toward the middle, which was entirely paved with large stones. The sides were occupied by the houses of the inhabitants. They are constructed of stone from the foundations up to the middle height of the walls, and covered with straw. Judging from the edifices and houses, these Indians appear to be very ingenious, and if we had not seen several recent structures, we might have thought these buildings were the work of the Spaniards." Sailing along the coast of Yucatan, the adventurers came in sight of several towns of the same character, one of them so extensive and well built as to suggest a comparison with Seville. Wooden dwellings built by fishermen,

wanting that during the early period of Spanish supremacy deserted buildings of a religious character were frequently visited by the natives for the purpose of performing their rites. Such was the case at Uxmal, as we have seen. This lingering attachment to the temples bears in itself the strongest evidence that the worshipers were of the same race with the builders.

The Abbé Brasseur—whatever may be thought of his conclusions and speculations—has brought to light, through his various publications, many facts serving to elucidate the former condition of the nations of Mexico and Central America. His translation of Bishop Landa's manuscript, for instance, has added in no small degree to our knowledge of the Mayas, such as they were about the middle of the sixteenth century, the period closely following the conquista. The bishop devotes a whole chapter to a description of the buildings of Yucatan, which begins with these words: "If the multitude, grandeur and beauty of edifices were capable of adding to the glory and renown of a country, as the gold, silver and various other riches have done for so many other regions of the Indies, it is certain that Yucatan would not have acquired less celebrity than Peru and New Spain; for of all things discovered in the Indies these edifices are the most remarkable. Indeed, they are found in such great number and in so many districts, and they are so well built, in their way, of cut stone that they cannot fail to challenge the admiration of the world." He then draws attention to the fact that the natives had no metal whatever for working the stones used in their buildings, and gives very curious reasons in attempting to account for their number. The people, he thinks, must have been governed by princes who, being either desirous of keeping their subjects constantly occupied, or particularly devoted to their idols, compelled the communities to build temples for them. The populations, he continues, may have been induced by particular motives to change their places of abode, and wherever they went, they erected new sanctuaries and houses for their chiefs. As for themselves, they were contented with wooden thatched dwellings, "unless the facilities for procuring in the country stone and lime as well as a kind of white earth (well-suited for building purposes) induced them to erect so great a number of monuments that, without having seen them, one might imagine such an account a folly." The untenableness of some of these arguments is obvious.

"This country," he says, "still hides a secret, which thus far has not been penetrated, and which the people of to-day are unable to disclose; for, there is no foundation in the saying that other nations had subjugated these (the present)

---

apparently in the water, are also mentioned; but the passage is rather obscure.—*Itinéraire du Voyage de la Flotte du Roi Catholique à l'Ile de Yucatan dans l'Inde, fait en l'an* 1518, *sous les Ordres du Capitaine Général Juan de Grijalva*, pp. 8, 11 and 12.—This account has been translated from the Italian by Ternaux-Compans, and is contained in the volume entitled "Recueil de Pièces relatives à la Conquête du Mexique." It has also been published in Spanish by Icazbalceta.—Mr. Stephens believes the town compared to Seville to be identical with Tuloom, which place, he thinks, was occupied by the natives long after the conquest (Yucatan, vol. ii, p. 405).

Indians in order to make them work, because one can clearly perceive by certain characteristics that it was the same race of naked Indians that constructed these edifices. Of this any one can convince himself who examines one of the largest in this place (Izamal), among the ornaments of which are seen the débris of men (human figures), which, though otherwise naked, have their loins covered with the cincture called *ex* by them, not to count other decorations still made by the Indians from a very strong cement. It happened, while I lived here, that there was found in a building which we tore down a large urn with three handles, covered externally with silvered ornaments, and containing the ashes of a burned body, among which we found objects of art of well-worked stone, such as the Indians still take in exchange as money; all of which proves that these buildings were constructed by Indians.

"I know well that, if they were Indians, they must have been superior in (physical) condition to those of to-day: taller as well as more robust. This is shown here in Izamal still more than elsewhere by the statues in demi-relief, moulded in cement (stucco) which, as I said, are seen on the piers, and represent men of high stature. Another proof was afforded by the extremities of the arms and legs of the man whose ashes were enclosed in the urn found in the before-mentioned building."

He then describes and illustrates by a ground plan one of the buildings of Izamal. Mentioning a staircase of this building, he says: "These steps are made of large and well-worked stones, though they are already very unsightly and ruined by time and rain." Further on, he observes: "There is no recollection of the founders (of the buildings), and they appear to have been the first."

Next follows an account of the buildings of Tihoo, which occupied the site of the present city of Mérida. A plan of the principal building is added. "This building," Landa states, "was given us (the Franciscans) by the Adelantado Montejo. Being covered with wood and brushes, we cleaned it, and built here with the stones furnished by it, a monastery of tolerable size and a good church, which we called the Church of the Mother of God." The trees and shrubs alluded to are no indication of great age, considering the rapid growth of vegetation in that tropical climate; but the author observes in another place: "These buildings were likewise of such high antiquity that the memory of their founders had been entirely lost." He further gives an account of Chichen-Itza, accompanied by a plan of the large pyramidal structure. The colossal serpents' heads seen at the foot of one of its staircases, and figured in Stephens's "Yucatan"* are particularly mentioned by the bishop. He is silent concerning the antiquity of the buildings, but mentions an Indian tradition

* Vol. II, p. 313.

relating to the place and to the causes which led at one time to its abandonment.*

The preceding extracts from Landa's work, some of which certainly betoken great simplicity,† hardly need be commented upon. Though he evidently considers the buildings seen by him as old, he gives to understand that their constructors belonged to a race identical with, or not much differing from, the Indians among whom he lived. The conquest of Yucatan, under Don Francisco Montejo, began in 1527, and there is historical evidence that Landa (born 1524 at Cifuentes de l'Alcarria, in Spain) was elected in 1553 guardian of the convent at Izamal, a distinction doubtless bestowed on him for his zeal in converting the natives; for it is stated by Brasseur that he was among the first missionaries of the order of St. Francis who went to Yucatan. He consequently lived in the country at a time when all available information was at his command; and being an instructor among the Mayas, he doubtless was conversant with their language, and able to interrogate them concerning the origin of the buildings. Considering these circumstances, the want of explicitness in his statements is really surprising and difficult of explanation, unless by supposing that the Indians themselves could give no account of the founders of the buildings. If Landa's opinions are expressive of those prevailing at his time, it would follow that even then some of the structures of the country formed subjects for speculation. Yet, Izamal, Tihoo and Chichen-Itza were well-known places at the period of the conquest, and they are also mentioned in the traditional history of Yucatan. From data furnished by Father Lizana (to whom I shall presently refer) Stephens argues that Izamal was still occupied at the time of the conquest,‡ and, relying on the statements of Cogolludo, he claims the same condition for Tihoo.§ As for Chichen-Itza, he says: "We do not even learn whether these buildings were inhabited or desolate." ||

The Abbé Brasseur has added to Landa's account of Yucatan from Father Lizana's work, entitled "Devocionario de Nuestra Señora de Itzmal, etc., 1663," a series of curious extracts taken from the first book, and relating to the country in general and to the foundation of the buildings at Izamal. As some of these extracts have a bearing on the subject here treated, I will insert their substance in this place.

During the period of heathendom, Lizana says, Yucatan was called "the country of turkeys and deer" (*u luumil cutz, u luumil ceb*), on account of the abundance of these species of game. The territory was subject to Montezuma,¶

* Landa: Relation etc.; § xlii, p. 323 etc.
† *Une ignorance naïve*, as Brasseur expresses it.
‡ Stephens: Yucatan; vol. ii, p. 435.
§ Ibid., vol. i, p. 97.
|| Ibid., vol. ii, p. 321.
¶ Probably not correct.

emperor of Mexico, but under the rule of many little kings, who acknowledged that monarch's sovereignty by the payment of tribute, consisting, as some say, of daughters of the princes and other young women of rank selected for their beauty, but, according to others, of woolen textile manufactures and certain equivalents of money, now called *cuzcas*. Though there were many petty princes in the country when the Spaniards arrived, it is related that it was originally ruled by one monarch, but that tyranny gave rise to a plurality of chiefs, who brought ruin upon themselves by feuds and persecutions, and ultimately had to abandon the stone buildings and to take refuge in the forests. Here the families lived united in small communities, being governed by the most prominent man among them. Lizana bases his opinion that the country was at one time subject to a single ruler on the similarity of the buildings: "They are all of the same architecture and style, and all built upon artificial elevations or *Kues*, which circumstances lead to the supposition that these edifices, bearing so much resemblance to each other, were erected by the order of one person." It is unnecessary to draw attention to the irrationality of this inference. He comments on the great number of edifices, most of which, he says, are almost entire, of sumptuous appearance, and ornamented with figures of armed men and of animals. Though he considers them in general as extremely old, he speaks of some as looking so new and showing the wooden lintels* above the doors in such a state of soundness that one would imagine they had been built only twenty years ago. "These buildings," he continues, "were not inhabited by the Indians when the Spaniards arrived; for the former lived in families in scattered huts amid the woods, as I stated. But they used, it is said, these structures as temples and sanctuaries, and in the highest place of each they kept their god, false as he was, and there they made their sacrifices, sometimes of men, women and children. Here they also performed their prayers, ceremonies, fasts and penitences."

The remainder of the extracts relates to the five pyramids of Izamal,† none of which was in a state of good preservation when Lizana saw them. He mentions the traditions which refer to the origin of these structures, and communicates even the names of the idols formerly placed upon them. Of particular interest is his account of Zamná, or Itzamná, the reputed civilizer of the Mayas and founder of the capital of their empire, Mayapan, destroyed about 1420, only a century before the conquest. To Zamná is ascribed the invention of Yucatec writing. He was buried at Izamal, which became celebrated on that account, and attracted pilgrims from all parts of the country.‡

* Mr. Stephens saw during his explorations in Yucatan lintels of zapote wood still in their places and in a good state of preservation. At Palenque they had disappeared, in consequence of which the tops of the doorways were broken. The zapote tree furnishes wood of extreme hardness and durability.

† Bishop Landa speaks of eleven or twelve.

‡ Landa: Relation etc.; pp. 349–365.

The details furnished by Lizana were accessible to Stephens (though not in the form presented by Brasseur in Landa's "Relation," which appeared long after the explorer's death), and he bases upon them his belief that Izamal was occupied up to the time of the conquest.

The buildings of Palenque, which, though not within the borders of Yucatan, owe their origin to a civilization analogous to that once spread over the peninsula, were old in the days of Cortés; and so were doubtless those of Copan, in the western part of Honduras. It is true, Hernandez de Chaves besieged and took in 1530, by order of Pedro de Alvarado, a city of that name; but it was evidently not the place now celebrated on account of its ruins and large monolithic idols, probably then as now shrouded in dense forest.* Mr. Stephens intimated as much; but he would have expressed himself with more positiveness, if the report of the Licentiate Garcia de Palacio, addressed in 1576 to the king of Spain (Philip II) had been known to him. The last-named writer, perhaps, was the first European who examined the locality, certainly the first by whom it was made known. At the time of his visit the buildings already were in a ruinous state, and he thinks them far superior to anything the barbarous spirit of the natives then inhabiting the region could devise. The traditions of the people, he says, attribute the edifices to immigrants from Yucatan, a view which he adopts, pointing out the analogy in style between the buildings of Copan and those found in Yucatan and Tabasco.† The ruins of Quirigua, on the river Motagua, in Guatemala, also may be considered as the remains of a city deserted long before the contact with the Caucasian race.

Mr. Stephens may be mistaken in a few cases; but on the whole, I think, he is right. I adopted his view years ago, and expressed myself in accordance with it in English and German publications. It gave me satisfaction to see that Mr. Bancroft, who has so carefully treated the subject of Mexican and Central American civilization, concurs in that opinion. "It may be accepted," he says, "as a fact susceptible of no doubt that the Yucatan structures were built by the Mayas, the direct ancestors of the people found in the peninsula at the conquest and of the present native population. . . . The Spaniards found the immense stone pyramids and buildings of most of the cities still used by the natives for religious services, although not for dwellings, as they had probably never been so used even by their builders. The conquerors established

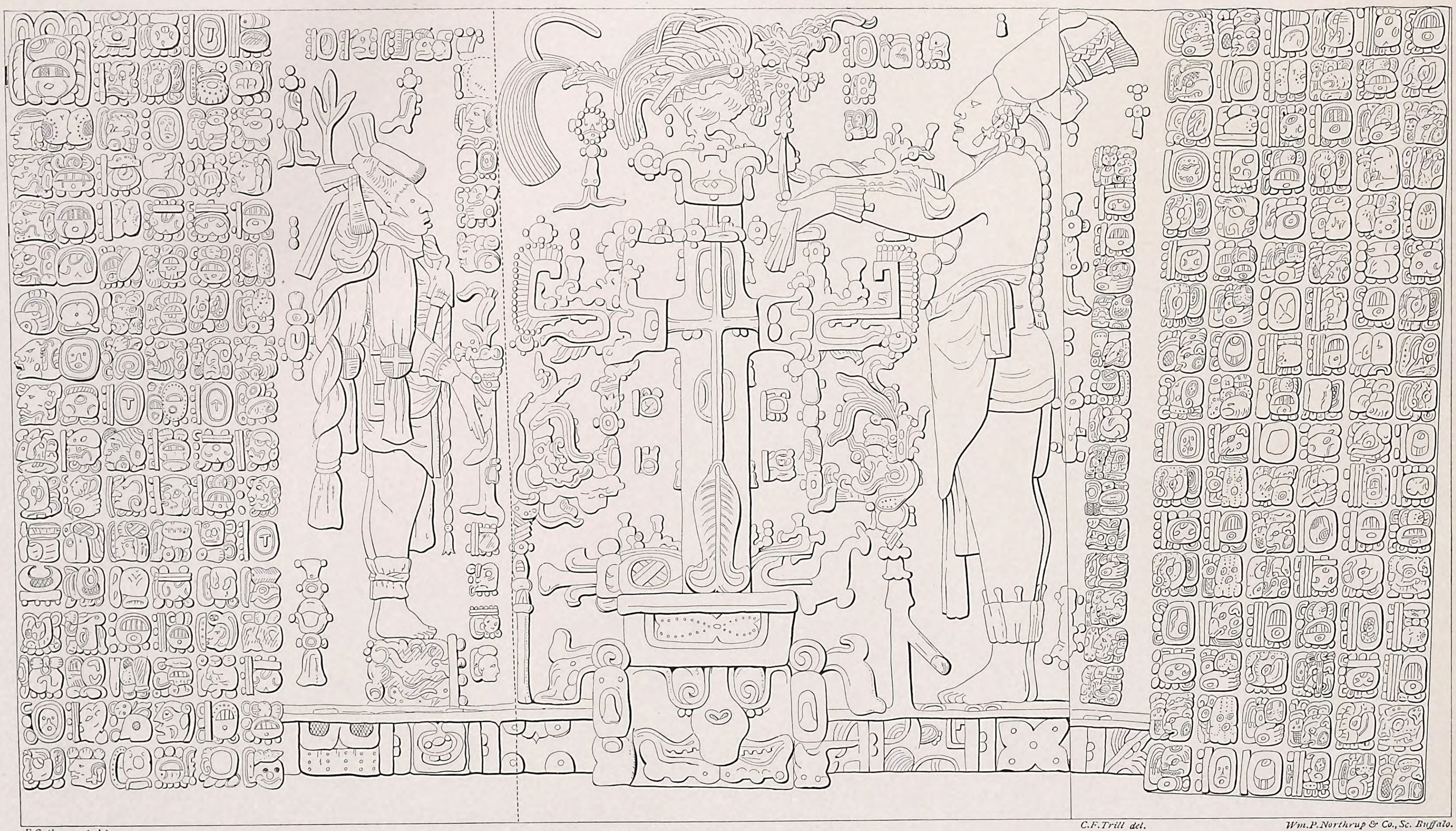
---

* The present village of Copan, Stephens says, consists of half a dozen miserable huts thatched with corn (Central America, vol. i, p. 90.)

† Carta dirijida al Rey de España por el Licenciado Dr. Don Diego Garcia de Palacio, año 1576; with English translation and notes by E. G. Squier, New York, 1860, p. 88.—Translated into German by Dr. A. von Frantzius as: "Amtlicher Bericht des Licentiaten Dr. Diego Garcia de Palacio an den König von Spanien etc.;" Berlin, New York, London, 1873.—There is also a French translation of this interesting report by Ternaux-Compans.

their own towns generally in the immediate vicinity of the aboriginal cities, procuring all the building material they needed from the native structures, destroying so far as possible all the idols, altars, and other paraphernalia of the Maya worship, and forcing the discontinuance of all ceremonies in honor of the heathen gods. . . . All the early voyagers, conquistadores, and writers speak of the wonderful stone edifices found by them in the country, partly abandoned and partly occupied by the natives. To suppose that the buildings they saw and described were not identical with the ruins, that every trace of the former had disappeared, and that the latter entirely escaped the notice of the early visitors to Yucatan, is too absurd to deserve a moment's consideration."*

* Bancroft: Native Races etc.; vol. iv, pp. 281–283.



F. Catherwood del. C.F. Trill del. Wm.P. Northrup & Co., Sc. Buffalo.

THE PALENQUEAN GROUP OF THE CROSS.

ARTOTYPE.

THE PALENQUE TABLET IN THE U. S. NATIONAL MUSEUM.

INDEX.

Aboriginal relics from a mound at Kantunile, 67.
Aboriginal writing, 47 *et seq.*
Affinity between Landa's signs and the Palenquean glyphs, 61.
Alphabetic writing of Central Americans; different opinions, 47 *et seq.*
Altar in the Temple of the Cross, 21, 23.
American Indians derived from the Jews, theory, 40.
Angrand, L., report on the drawings of J.-F. de Waldeck, 11, 12.
Analtés, 53.
Antiquity of ruins of Central America and Yucatan, 65 *et seq.*
Aqueduct at Palenque, 16.
Armin, restoration of the Palace and Temple of the Three Tablets at Palenque, 65.
Astarte, Syrian goddess, figured with a cross, 40.
Aubin, M., on the Mexican system of writing; Itzcoatl (Obsidian Serpent), 51; designates Maya characters as calculiform, 57.
Aztecs, prayer to the cross, 43.

Bancroft, H. H., "The Native Races of the Pacific States," cit. 5, 8, 9, 11, 12, 24, 46, 55, 76; tradition relative to Votan, 7; his appreciation of the works and drawings of Stephens and Catherwood, 12; on the superstructure of the Temple of the Cross, 24; on the occurrence of the cross, 46; on Brasseur's translation of the Codex Troano, 55; account of a statue of a horse worshiped by the Itzas of Lake Peten, 68; on Yucatec structures, 75.
Baradère, H., takes Dupaix's manuscript and drawings to Paris, 10.
Berendt, Dr. C. H., his valuation of Stephens's works, 13; opinion concerning sculptured horses' heads in Yucatan; on the equine statue of the Itzas, 68; discovers the site of an ancient town (Cintla); account of excavations made there, 69, 70; "Remarks on the Centres of Ancient Civilization in Central America," cit. 70.
Bernasconi, A., ordered to explore the ruins of Palenque, 8.
Berthoud, H., prints the English translation of Del Rio's report on Palenque, 8.
Bertrand, A., experiments in sculpturing stone, 37.
Bird-serpent, 44.
Bollaert, W., attempts to translate a part of the Dresden Codex; letter to De Rosny, 56.
Books among Central Americans, 50.
Brasseur de Bourbourg, Abbé, on the founding of Palenque, according to tradition; Votan, 6; on the discovery of the ruins of Palenque, 7; his translation of the reports of Calderon and Bernasconi, 8; edits "Monuments Anciens du Mexique," 11; his appreciation of Stephens's and Catherwood's labors, 12, 13; explanation of the word Otolum, 15; discovers a copy of Diego de Landa's manuscript and translates it, 47; "Histoire des Nations Civilisées du Mexique etc.," cit. 6, 51, 52; attempts to interpret Central American manuscripts, 53; "Manuscrit Troano. Études sur le Système Graphique et la Langue des Mayas," 54; possibility that Maya manuscripts may be found in the coffins of priests, 60.
Brinton, Dr. D. G., "The Myths of the New World," cit. 43, 44, 45; his views respecting the cross, 43, 44, 45; significance of its Mexican name (Tonacaquahuitl); represents the god of rain and health, 43; interpretation of the Palenque Group of the Cross, 44; hostile to the phallic theory, 45; "The Ancient Phonetic Alphabet of Yucatan," cit. 52, 59; his later view as to the character of Landa's alphabet, 52.

Cabrera, Dr. P. F., "Teatro Crítico Americano," 8.
Calderon, J. A., explores the ruins of Palenque, 7, 8.
Catlin, G., 2.
Cannibalism, 45.
Castañeda, L., draughtsman of Dupaix; his drawings and their publication, 9, 10.
Catherwood, F., draughtsman, accompanies Stephens on his travels; estimate of his drawings by Bancroft and Brasseur, 12; his representation of the Group of the Cross, 4, 31, 34, 35, 36.
Central America, aboriginal writing in, 47 *et seq.*; pre-Toltecan civilization in, 58.
Central American glyphs and manuscripts, attempts to interpret them, 53 *et passim.*
Central American ruins, notes on; Stephens on their antiquity, 65.
Cerros. *See* Mounds.
Champoton, 52.
Chalchihuitlicue, 44.
Charencey, Count H. de, attempts to interpret Central American characters, 53; "Recherches sur le Codex Troano," cit. 55; tries to interpret Palenquean glyphs; "Essai de Déchiffrement d'un Fragment d'Inscription Palenquéenne;" bases his decipher-

ment of the glyphs on Del Rio's illustrations, 59; on the meaning of the glyphs on the Tablet of the Cross, 64.
Charnay, D., explores American ruins; his atlas of photographs, among them that representing the Palenque Cross; his work "Cités et Ruines Américaines," 13; cit. 21, 23, 27, 29, 33; describes the slabs composing the Group of the Cross; error on his part, 27; sees tablets from the Temple of the Cross in the village of Santo Domingo, 28; photograph of the cross at Palenque, 33, 34, 35, 36, 38.
Chichen-Itza, time of occupancy, 73.
Clavigero, Abbé, mentions crosses; "History of Mexico," cit. 41; quotes Mexican names, 51.
Codex Mexicanus No. 2; Brasseur's attempted translation, 54.
Codex Peresianus. *See* Codex Mexicanus No. 2.
Codex Troano, found by Brasseur at Madrid; edited by him under the auspices of the Scientific Mexican Commission as "Manuscrit Troano. Études sur le Système Graphique et la Langue des Mayas;" appearance described, 54; remarks on Brasseur's translation by Bancroft and Charencey, 55.
Cogolludo, refers to crosses in Yucatan, 41, 43; "Historia de Yucathan," cit. 68; time of occupancy of Tihoo, 73.
Copan, cross at, 41; glyphs on monolithic idols or statues at, 64; age of ruins, 64, 75.
Cozumel, Island of; temple; cross found there, 40, 43; small temple; its antiquity according to Stephens, 66; village, described by Juan Diaz, 70.
Cross, on Egyptian sculptures and paintings; on coins representing Astarte, the Syrian goddess; among ancient nations generally; meaning of the emblem; appears to relate to the creative energy of nature; seen by Grijalva on the Island of Cozumel, 40; mentioned by Herrera, Gomara, Cogolludo, Martyr, Palacio, Ruiz and Garcilasso de la Vega, 41; Dr. J. G. Müller's views and theories; employed as a symbol by Hindoos, Egyptians, Syrians and Phœnicians; decorated the head of the Ephesian goddess; appears in connection with sun-gods; venerated in America; Stephens's denial; a phallic symbol, 42; Dr. Brinton's views; in the temples of Cozumel and Palenque; worshiped by Aztecs and Toltecs; in the temples of Popayan and Cundinamarca; called Tonacaquahuitl by the Mexicans; represented the god of rains and health; worshiped in Yucatan, 43; carried by the Aztec goddess of rain and by Quetzalcoatl; formed by the Muyscas in sacrifices, 44; opinions of Squier, Bancroft, and Valentini, 46.
Cundinamarca, cross in temple of, 43.
Cuzamil. *See* Cozumel.
Cuzco, cross preserved at, 42.
Cuzcas, 74.

Diaz del Castillo, Bernal, "Historia Verdadera de la Conquista de la Nueva-España," cit. 66, 68, 69.
Diaz, Juan, describes Grijalva's expedition, 66, 70; on buildings in Yucatan, 70.
Dresden Codex, mentioned, 43; called a Mexican manuscript by Humboldt; reproduced by Kingsborough; its Palenquean character; description and history, 53; attempts to decipher it, 54, 56; fragment reproduced by Stephens, 64.
Dupaix, Capt. William, sees the slabs forming the Tablet of the Cross in their original places in the Temple of the Cross, 3, 25; explores the ruins of Palenque; accompanied by Luciano Castañeda; a copy of his manuscript report published by Kingsborough, 9; his manuscripts and drawings taken to Paris and published in "Antiquités Mexicaines," 10; account of the Temple of the Cross, 17; statement concerning two stone slabs with human figures in bas-relief in the Temple of the Cross, 27.

Egyptian sculptures and paintings, cross represented in, 40.
Equine statue, worshiped by the Indians of Lake Peten, 68.
Estacheria, Don José, causes explorations of Palenque, 7, 8.

Fejérváry, M. de, manuscript of, 43, 45, 54.
Fergusson, J., "Rude Stone Monuments," cit. 37.
Feathered Serpent. *See* Quetzalcohuatl.
Flattening of the head among the Mayas, 38.

Garcilasso de la Vega, account of a cross preserved at Cuzco; his "Royal Commentaries of Peru," cit. 41, 42.
Galindo, Col. Juan, letter on Palenque addressed to the Geographical Society of Paris and published in "Antiquités Mexicaines;" letter to the President of the American Antiquarian Society, 10; description of the Temple of the Cross, 19; on the position of two sculptured stone slabs in the Temple of the Cross, 27.
Gerolt, Baron von, solicits a plaster cast of the Smithsonian tablet for the Prussian government, 2.
Glyphs, Central American, efforts to interpret them, 53; on the Palenque tablets; difficulties encountered in deciphering them, 57; Charencey's attempts; insufficiency of Landa's key, 59; analysis showing their affinity to Landa's signs; their general purport, 61, 62, 63; on monolithic statues at Copan, 64.
Gomara, Francisco Lopez de, on crosses in Yucatan, 40; "Hispania Victrix etc.," cit. 41.
Grijalva, Juan de, sees a cross on the Island of Cozumel, 40; his expedition described by Juan Diaz, 66, 70.
Group of the Cross, 31 *et seq.*; tablets composing it; outline plate in part a reproduction of Catherwood's design; dimensions of the slabs, 31; representations after Del Rio, Waldeck, and Charnay, 33; the Smithsonian tablet the complemental portion; comparison of the designs, 34; on its significance, 37; Dr. Brinton's explanation, 44; the Fejérváry manuscript, 45; glyphs selected for decipherment by Charencey, 59.
Gucumatz, 44.

Herrera, Antonio de, flattening of the head among the Mayas, 38; temple and cross on the Island of Cozumel; crosses in other parts of the island and in Yucatan, 40, 41; "Historia General etc.," cit. 41.
Honduras, cross in, 41.
Horse, statue of, worshiped by the Itzas, 68.
Human sacrifices, 38, 39.
Humboldt, A. von, on crosses in America; "Kritische Untersuchungen etc.," cit. 43; on the Mexican system of writing, 51; the Dresden Codex, 53.
Hunab-ku, 59.
Huaca, 42.

Itzamná. *See* Zamná.
Itzas, worship the statue of a horse; their migration, 68.
Itzcoatl, 51, 52.
Ixtlilxochitl, "Histoire des Chichimèques," cit. 44.
Izamal, remarks on buildings of, by Landa, 72; by Lizana, 74.

Jews, the ancestors of the American Indians, theory; Kingsborough a supporter of this view, 40.
Juarros, Domingo, description of Palenque; "History of the Kingdom of Guatemala," cit. 7.

Kantunile, relics from a mound at, 67.
Kingsborough, Lord, publishes Dupaix's report, 9; attempts to prove the descent of the Mexicans from the Jews, 40; reproduces the Dresden Codex, 53.
Klemm, Dr. G., on the Dresden Codex; "Allgemeine Cultur-Geschichte der Menschheit," cit. 53.
Kues, 74.
Kukulkan, 44, 59.

Lafitau, "Moeurs des Sauvages Amériquains," cit. 40.
Landa, Bishop Diego de; "Relation des Choses de Yucatan," cit. 37, 47, 48, 49, 53, 60, 74; flattening of the head among the Mayas, 38; human sacrifices, 38, 39; baptismal rites, 38; Maya alphabet, 47, 48, 49; on Maya writing; destruction of Maya books, 48; Maya calendar, signs of the days and months, 47, 60; on buildings in Yucatan, 71; on buildings at Izamal, Tihoo and Chichen-Itza, 72.
Languages, mutability of. *See* Lyell.
Las Casas, Bishop, "Historia Apologética de las Indias Occidentales;" on books, chroniclers, and methods of writing in New Spain and other parts, 50, 51.
Lenoir, A., "Antiquités Mexicaines," cit. 10, 19, 20, 24, 33.
Lizana, account of Yucatan, 73 *et seq.*; buildings at Izamal, 74.
Lyell, Sir Charles, on the mutability of languages; "Antiquity of Man," cit. 57.

McCulloh, Dr. J. H., "Researches," cit. 40.
McQuy, Dr., brings a copy of Del Rio's report to London, 8.
Martyr, Peter, refers to crosses in Yucatan, 41.
Matile, Dr. G. A., makes a cast of the Smithsonian tablet, 2; he identifies it, 3.

Maya alphabet. *See* Landa *and* Yucatec alphabet.
Maya calendar. *See* Landa *and* Yucatec calendar.
Mayas, probably the builders of Palenque; flattening of heads, 38; human sacrifices, 38, 39.
Mendieta, Gerónimo de, "Historia Eclestiástica Indiana, cit. 52.
Mexican system of writing, Las Casas on, 50; Aubin and Humboldt, 51.
Mexicans, Jewish descent, theory, 40.
Mexico, aboriginal writing in, 47 *et seq.*; crosses in, 41.
Mills, Clark, makes a cast of the Smithsonian tablet, 2.
Morelet, Arthur, visits Palenque; his work in part translated by Mrs. M. F. Squier, and published as "Travels in Central America," 13; cit. 25, 36, 38, 69; observations concerning the Stone of the Cross, 25; on the buildings and sculptures of Palenque, 36; account of the equine statue worshiped by the Itzas, 68; on the size of the Island of Peten, 69.
Mounds at Kantunile; at the hacienda Xuyum, 67.
Müller, Dr. J. G., observations on the cross; a nature-symbol; employed as such by Hindoos, Egyptians, Syrians and Phœnicians; decorated the head of the Ephesian goddess; appears in connection with sun-gods; a symbol of the rain-god in America, 42; on Stephens's denial; occurs in the Dresden Codex and the Fejérváry manuscript; originally a phallic symbol; "Geschichte der Amerikanischen Urreligionen," cit. 43.
Muyscas, 44.

National Institute for the Promotion of Science, receives the tablet now in the Smithsonian Institution and a letter from Consul Charles Russell, 1.

Obsidian Serpent, 51.
Ordoñez y Aguiar, Ramon de, his manuscript, 6; causes an exploration of Palenque; his report, 7.
Otolum, name of a small river, 15.
Otula. *See* Otolum.

Palace at Palenque, 16.
Palace and Temple of the Three Tablets at Palenque, restoration after Armin, 65.
Palacio, Licentiate Dr. Don Diego Garcia de, on a cross at Copan, 41; ruins of Copan, 75; "Carta dirijida al Rey de España, etc.," translations, 75.
Palenque, explorations of, 5 *et seq.*; name; location; aboriginal name not known; probably in a ruinous state at the time of the conquest, 5; tradition relative to origin; manuscript of Ramon de Ordoñez y Aguiar; Votan, 6; discovery of the ruins according to Juarros, Stephens and Brasseur; Ordoñez causes an exploration; explorations of Calderon and Bernasconi, made by order of Don José Estacheria, 7, 8; their reports in part translated by Brasseur de Bourbourg; exploration by Captain Antonio del Rio; his report; translation and publication of the same, 8; explorations by Captain William Dupaix; a copy of his report published by

Lord Kingsborough, 9; his manuscript and drawings taken to Paris by H. Baradère and published; letter on Palenque by Colonel Juan Galindo, addressed to the Geographical Society of Paris; exploration by Jean-Frédéric de Waldeck, 10; publication of his drawings by the French government, 11; Stephens's exploration; ruins visited by A. Morelet; his work translated by Mrs. M. F. Squier; Désiré Charnay's exploration; his photographs and work, 13; plan of, 16; Morelet's observations on the architecture and sculpture, 36; implements probably used in working the stone, 37.

Palenque tablet. *See* Group of the Cross.

Paraguay, cross found in, 41.

Peale, Titian R., information relative to the history of the Smithsonian tablet; employs Clark Mills to make a cast of it, 2.

Peten, Lake and Island, accounts, 68, 69.

Phallic theory, 42, 43, 45.

Pharomacrus Mocinno, De la Llave, 38.

Pontonchan. *See* Champoton.

Popayan, cross at, 43.

Pre-Columbian propagation of Christianity in America, theory, 39.

Pre-Toltecan civilization in Central America, 58.

Prescott, W. H., "Conquest of Mexico," cit. 6, 69.

Pyramidal structure bearing the Temple of the Cross, 15; mentioned by Dupaix, 18; by Galindo, 19; by Stephens and Charnay, 20; Waldeck's plate, 21.

Quetzal, 38.

Quetzalcohuatl (Quetzalcoatl), 39, 44, 59.

Quirigua, ruins of, 75.

Rio, Capt. Antonio del, explores the ruins of Palenque; his report translated into English, as "Description of the Ruins of an Ancient City etc.;" plates by Waldeck, 8; German and other translations; Spanish original, 9; account of the Temple of the Cross, 15; excavations made there, 17; part of his plate of the Group of the Cross, 32; want of correctness, 34 *et seq.*

Rosny, Léon de, attempts to decipher Maya characters, 53; Codex Mexicanus No. 2 called Codex Peresianus by him, 54; "Essai sur le Déchiffrement de l'Écriture Hiératique de l'Amérique Centrale," cit. 54, 56.

Ruiz, Antonio, on a cross in Paraguay; "Conqvista Espiritval etc.," cit. 41.

Russell, Charles, Consul, sends the Palenquean slab in fragments to the National Institute, 1; correspondence with Stephens, 2.

Sacrifices, human, 38, 39.

Saint Thomas, supposed missionary labors in America, 39, 41.

Salisbury, Jr., S., translation by, 3; on sculptured horses' heads in Yucatan, 67; "The Mayas etc.," cit. 68.

Sculpture, Palenquean, Morelet's opinion, 36.

Slabs composing the Group of the Cross. *See* Group of the Cross.

Smithsonian tablet, sent in fragments to the National Institute by Consul Charles Russell; removal from Palenque, 1; information obtained through Titian R. Peale; plaster cast made by Clark Mills for the Prussian government; another cast made by Dr. G. A. Matile, 2; completes the Group of the Cross as seen by Del Rio and Dupaix; Dr. Matile's identification published; photograph sent to Dr. Phil. J. J. Valentini, 3; identified by him, 4; description of, 31 *et seq.*

Squier, E. G., translation of Palacio's work, cit., 41, 75; "The Serpent Symbol etc.;" his view concerning Yucatan crosses, 46.

Squier, Mrs. M. F., translation of Morelet's work, 13.

Statue of a horse. *See* Equine statue.

Statues in front of the Temple of the Cross, discovered by Waldeck, 29; described by Stephens, 30.

Stephens, J. L.; his visit to Laguna; entertained there by Charles Russell, 1; correspondence with the same; instructs Pawling to make plaster casts of Palenquean sculptures; his plan for the foundation of a museum of American antiquities, 2; "Incidents of Travel in Central America, Chiapas and Yucatan," cit. 2, 5, 7, 10, 12, 20, 21, 24, 25, 26, 28, 30, 31, 66, 75; "Incidents of Travel in Yucatan," cit. 66, 67, 69, 71, 72, 73; design of the Palenque tablet, 4; on the discovery of the ruins of Palenque, 7; his diplomatic mission to Central America; Catherwood, the artist, his fellow-traveler; results of his surveys; publication of his works; appreciation of Stephens's and Catherwood's labors by Bancroft and Brasseur de Bourbourg, 12; by Dr. C. H. Berendt; account of Palenque; duration of the survey, 13; measurement of the Temple of the Cross, 15; description of the Temple of the Cross, 20 *et seq.*; on the tablet in the Temple of the Sun, 23; discrepancy between Stephens's and Waldeck's designs of the Temple of the Cross; describes the Tablet of the Cross, 24; account of the slabs composing the group; sees fragments of the slab now preserved in the United States National Museum, 26; describes two sculptured slabs formerly in the Temple of the Cross, but now in the village of Santo Domingo, 28; account of a statue belonging to the Temple of the Cross, 30; measurement of the slabs composing the Tablet of the Cross, 31; error with regard to the adoration of the cross in America, 42; describes monolithic idols or statues at Copan, 64; on the antiquity of the ruins of Yucatan and Central America, 65 *et seq.*; quotes the statements of Bernal Diaz del Castillo and of Juan Diaz in support of his view; refers to documents proving the late occupancy of Uxmal, 66; penknife taken from a mound at Kantunile, 67; account of the equine statue worshiped by the Itzas, 68; on buildings on the Island of Peten, 69; time of occupancy of Izamal, Tihoo and Chichen-Itza, 73.

Tablet in the Temple of the Sun, 23, 38, 39.

Tablet of the Cross. *See* Group of the Cross.

Tablet, Smithsonian. *See* Smithsonian tablet.
Tablets, sculptured, in the village of Santo Domingo; formerly in the Temple of the Cross; seen there by Del Rio, 17; by Dupaix, 18; by Galindo, 19; afterward removed to Santo Domingo; noticed by Stephens, Waldeck and Charnay, 28.
Temple of the Beau Relief, 16.
Temple of the Cross, 3, 4, 15, *et seq.*; Del Rio's account, 15; Dupaix's account, 17; Galindo's observations, 19; Stephens and Charnay, 20; dimensions; altar, 21; views and ground plan, 22; excavations made by Del Rio; superstructure, 23; chief ornament: the Tablet of the Cross, 24; other sculptured tablets, 28; stone statues, 29; the left slab of the Tablet of the Cross still in its place, 31.
Temple of the Sun, 16, 17; resembles the Temple of the Cross; tablet, 23, 38, 39.
Temple of the Three Tablets, 16; restoration after Armin, 65.
Temples, on the Island of Cozumel, 40, 66; at Cundinamarca and Popayan, 43.
Teocalli, 41.
Tiedemann, Prof., supports the theory of a pre-Columbian propagation of Christianity in America, 39.
Tihoo, time of occupancy, 73.
Toltecs, their adoration of the cross, 43.
Tonacaquahuitl, 43, 44, 46.
Trogon resplendens, Gould, 38.
Tylor, E. B., on Mexican writing; "Researches etc.," 52.
Tzendals, still living in the neighborhood of Palenque, 6; buildings of Palenque perhaps erected by them, 38.
Tzimin-chak, 68.

Valentini, Dr. Phil. J. J., on the Mexican calendar-stone; receives a photograph of the Smithsonian tablet, 3; recognizes it as the complement of the Tablet of the Cross, 4; on Landa's alphabet, 50.
Villagutierre Soto-Mayor, Juan de, "Historia de la Conquista de la Provincia de el Itza," cit. 68.
Vogt, Prof. Carl, describes A. Bertrand's experiments in sculpturing stone, 37.
Votan, tradition relative to, 6.

Waldeck, Jean-Frédéric de, explores the ruins of Palenque, 3, 10 *et seq.*; makes the illustrations for the English translation of Del Rio's report, 8, 10; biographical notice; arrival at Palenque, 10; his drawings examined by a commission appointed by the French government; their publication with a text by Brasseur de Bourbourg, 11; "Monuments Anciens du Mexique etc.," cit. 21, 26, 28, 29, 30; plan of Palenque, 16; his plate representing the pyramid supporting the Temple of the Cross, 21; notice of the middle slab of the Temple of the Cross, 25; sees tablets from the Temple of the Cross at the village of Santo Domingo, 28; discovers two stone statues, 29; his delineation of the Tablet of the Cross, 33, 34, 35, 36, 59; design of glyphs on the left tablet in the Temple of the Cross, 58.
Wuttke, Prof. H., on Landa's alphabet, 49; its origin, 50; "Die Entstehung der Schrift, etc.," cit. 49, 50.

Xuyum, mounds at, 67,

Yucatan, work on by Waldeck, 11; crosses, 40, 41, 43; aboriginal writing, 47 *et seq.*; ruins, 65 *et seq.*; Stephens on their antiquity, 65; buildings, etc., described by Landa and Lizana, 71 *et seq.*; antiquity of ruins according to Bancroft, 75.
Yucatec alphabet, 47 *et seq.*; signs, 48; opinion of Prof. Wuttke, 49; Dr. Brinton's views, 52.
Yucatec calendar, 47; signs, 60.
Yucatec writing, system of, 47 *et seq.*; invention ascribed to Zamná, 74.
Yucatecs, their implements, 37; writing, 47 *et seq.*

Zamná, the reputed civilizer of the Mayas and founder of Mayapan; supposed to have invented Yucatec writing; buried at Izamal, 74.

SMITHSONIAN CONTRIBUTIONS TO KNOWLEDGE.
318

ON THE

REMAINS OF LATER PRE-HISTORIC MAN

OBTAINED FROM

CAVES IN THE CATHERINA ARCHIPELAGO, ALASKA TERRITORY,

AND ESPECIALLY FROM THE

CAVES OF THE ALEUTIAN ISLANDS.

BY

W. H. DALL.

WASHINGTON CITY:
PUBLISHED BY THE SMITHSONIAN INSTITUTION.
1878.

ADVERTISEMENT.

THE following description of the contents of a burial cave, discovered in the Aleutian Islands, and generously presented to the National Museum by the Alaska Commercial Company of California, has been prepared by the author at the request of the Smithsonian Institution. It is believed that the record of all the facts in regard to this collection will have an especial value, from the probability that these remains are not likely to be duplicated, and, even in the region from which they come, were, at the time of their collection, unique in the excellent state of their preservation. With this account of them the author has incorporated such notes, derived from his observation and experience among the Aleüts and other people of kindred stock, as might serve to explain doubtful questions in regard to the objects collected, or their uses or modes of manufacture; much of which he believes to be now recorded for the first time, and which may prove of value to ethnological science.

JOSEPH HENRY,
Secretary S. I.

SMITHSONIAN INSTITUTION,
Washington, D. C., January, 1876.

CAVE RELICS OF THE ALEUTIAN ISLANDS.

THAT great series of islands extending from the mouth of Cook's Inlet to the end of the Aleutian chain, and perhaps properly including the Commander's Islands, was named by Forster, in 1786, the Catherina Archipelago, in honor of Catherine the Great, Empress of all the Russias, to whose enlightenment and liberality the explorations in that quarter were largely due.

The chain between Lon. 163° and 188° W. of Greenwich bears the general name of the Aleutian Islands, from the term Aleüts, applied by the Russians to their original inhabitants.

East of Lon. 163° the various groups have local names, of which the more important are the Shumagin Islands, the Semidi Islands, the Kadiak group, and the Barren Islands.

The entire Archipelago is, or has been, inhabited by tribes of the Eskimo stock. These are naturally divided into two groups: I, the Kaniag'mūts, or typical Eskimo tribes, and, II, the Aleüts, or Aleutian Islanders.

The Kaniag'mūts, in language and physique, in implements and weapons, and in manners, are hardly distinguishable from those of the Western Eskimo, who inhabit the coast lands of the continent, from the Kusilvak mouth of the Yukon River to Cook's Inlet. The differences now existing are due to original local peculiarities,—common to each individual assemblage of settlements of any aboriginal stock;—and to the greater pressure of civilization which circumstances have brought to bear on them during the last three quarters of a century.

They are described by the earliest voyagers as independent in character, long resisting the efforts of traders to subdue them and of missionaries to christianize them; as sharing with the other Eskimo of that region, uncleanly habits, sensual practices, a belief in Shamanism, extreme facility in the use of the skin canoe or kyak, and great powers of endurance. To these they united certain peculiar superstitions, which indicate a passage from typical Eskimo animism toward the more differentiated and still more peculiar notions entertained by the Aleutians. The intercourse of the Kaniag'mūts with the latter people was greatly interfered with by the hostilities usual to adjacent and dissimilar aborigines in all parts of the world, and especially by the differences in their dialects. There is reason to

believe, however, that a certain amount of inter-tribal commerce always existed between them. After the advent of the Russians, hostilities were put a stop to; the extensive transportation of both Aleüts and Kaniag'mūts from place to place within the territory previously divided between them, and the effects of civilization on both, have done much to efface early differences, except those of language.

We are obliged to follow general usage in applying the name Aleüt* (pronounced Aly-oot') to the tribes inhabiting the region west of the Kaniag'mūts; although it is a word foreign to their language, and of uncertain origin. It was applied to them by the early Russian explorers, and is perhaps an opprobrious epithet from some one of the Eastern Siberian dialects. Their own name for themselves appears to be Unŭng'ŭn, but they often follow the Russians in styling themselves Aleüts, while asserting that it is not their original name. While the comparison of even a limited number of *elementary* words from their vocabulary shows unmistakable evidences of their Eskimo derivation, yet, in construction, prefixes and suffixes, and in the majority of ordinary words in their language, they differ in a very marked manner from their neighbors and nearest relations, the Kaniag'mūts. The Aleutian language is much richer, and they count from one to one hundred thousand by the decimal system, while the Kaniag'mūts reach their limit of numbers at one or two hundred, using five as a basis.

The evidences of the shell heaps are conclusive as to the identity with the continental Eskimo of the early inhabitants of the islands, as far as implements and weapons go; but their insular habitat, and the changed fauna and climatic conditions under which they existed, gradually modified their habits, and their manufactures, of every kind. With these changes, it is probable, the language changed.

Their physiognomy differs somewhat from that of the typical Eskimo, though individuals are often seen who could not be distinguished from ordinary Innuit, in a crowd of the latter. It is probable that the climate, and almost uninterrupted canoe-life, may have much to do with this, and there is no impossibility in the hypothesis that occasional shipwrecked Japanese may have contributed to modify the Aleutian physique; though leaving no traces of their language or

---

* In a volume entitled Memoires et Obs. Geographiques, etc., by Samuel Engel, (Lausanne, 1765, 4to,) and containing little else of value, I find some notes, which may perhaps afford a clue to the deriviation of this much disputed word "Aleüt." He gives an extract of a letter from St. Petersburg, which appeared in the *Gazette de Leyden*, February 26, 1765, in which it is stated that the Russian fur traders, east of Asia, had discovered inhabited islands in 64° N. Lat. which they called *Aleyut*. He calls attention to the statement of Muller, to the effect that the people of the Diomedes Islands were called by the Chukchi "Achjuch-Aliat," and the adjacent coast of America "Kitchin-Aeliat," and suggests that Aliat, or Aeliat, and Aleyut are identical terms. The Chukchi word for island is known to be i'lū-ā or eé-lū-ā; "kit-chin" meaning great or extensive; hence it would seem as if the Russians, after forcing their way into Kamchatka, subsequently to their hostilities with the Chukchi, brought with them as a proper name the general Chukchi term for island, and subsequently applied it to the Aleutian Chain and its inhabitants when they were discovered. Much the same has happened to the Aleüt word for continent, now corrupted into Alaska.

handicraft among the Islanders. The common notion of the derivation of these people from the Japanese by emigration, owes its popularity chiefly to its superficiality, and cannot for a moment be maintained by any one conversant with the characteristics of both races. I assign very slight value to traditions, but such as they have, imply an Eastern and continental origin.

In character and mental attributes the Aleüt differs from the Kaniag'mūt, even more than in physique and language.

Uniting a greater intellectual capacity, with equal (if not superior) facility in canoe-navigation and the chase; the Aleüt in personal independence of character is far inferior to his neighbors. How much this has been due to the comparative security of their island homes, and how far to the merciless persecution and numberless outrages to which they were subjected by the early Russian traders, cannot now be determined. It is very evident however that the Russians found a great difference at the outset between the Aleüts and Kaniag'mūts, in this respect.

A perusal of the chronicles of the early trading voyages sufficiently attests this.

There were numerous petty conflicts between the different groups of Aleutian Islanders, chiefly arising from disputes in regard to the limits of their hunting grounds, and traces of this feeling exist even to the present day, though it is many years since any troubles have occurred. But the vindictive and energetic conflicts which characterize the disputes between continental Eskimo tribes and the Indians, do not appear to have ever been paralleled among the people under consideration.

A discussion of all the characteristics of the two peoples is not within the scope of this paper, but some reference to such differences is necessary to a complete comprehension of what follows.

The Aleüts possessed great endurance, especially in regard to cold; hospitality was one of their prominent traits, as were love of children and deference to the aged. They were not uncleanly compared with other wild tribes, and the activity of their lives doubtless had something to do with their being less sensual than most of the Eskimo. Their form of Shamanism was in many respects peculiar, and their rites more complicated and mysterious, than those practiced by any other tribes of the same stock as far as we know. It is a matter of constant regret that in their earnest propagandism, the early missionaries took every means, secular as well as spiritual, of destroying all vestiges of the native beliefs and the rites which were practiced in connection with them. No record of them is any where preserved with the exception of a few casual allusions scattered through various works, relating to the exploration of that region. The little that we do know is so interesting that it renders our ignorance of the rest the more provoking. During the last eighty years so thoroughly have the natives

been drilled into the idea that the ancient rites were wholly infamous and damnable, that it is at present impossible to obtain any information; even from those whose age renders it almost certain that they must know a good deal respecting the ancient customs. They have even come to regard their ancestors as Pagans, and to attach no reprobation to the ethnologist who may rifle their burial places. It is probable that after the Russian rule became tolerably well established, some of the more independent spirits among them left the settlements and took to the mountains, or the less frequented portions of the shores of the larger islands, and for a time secured a precarious existence. At least I refer to some such origin as this, a singular superstition, still current, and firmly believed, even by the best educated and most intelligent among them. This is to the effect that there are still living among the mountains or on the less frequented coasts, bands of unchristianized people whom they denominate Vay'geli. These are supposed to be capable of any crime, and to nourish great hostility to the Christian natives.

Very intelligent natives firmly assert that they have seen them. In hard seasons they are asserted to visit villages in the night and steal food. If a raven carries off an Aleüt's fish, hung up to dry, it is referred at once to the Vay'geli; and if a native disappears—perhaps lost in his kyak in crossing a tide-rip in one of the straits—he is often supposed to have joined one of the bands of spectral outlaws.

It is almost needless to say that there is no reasonable ground for any such belief at present.

Like most of the Innuit tribes they were fond of dances and festivals, which, like those of Norton Sound, were chiefly celebrated in December. Food was then plenty, and the other hunting season did not commence till a little later. Whole villages entertained other villages, receiving the guests with songs and tambourines. Successive dances of children, naked men beating their rude drums, and women curiously attired, were followed by incantations from the Shamans. If a whale was cast ashore, the natives assembled with joyous and remarkable ceremonies. They advanced and beat drums of different sizes. The carcass was then cut up and a feast held on the spot. The dances had a mystic significance. Some of the men were dressed in their most showy attire and others danced naked in large wooden masks which came down to their shoulders and represented various sea animals.

They had religious dances and festivals in December. During these, temporary images, made of wood or stuffed skins, were carried from island to island and strange ceremonies, of which we have only dim traditions, were performed in the night. Hundreds of women, wearing masks, were said to have danced naked in the moonlight; men being rigidly excluded, and punished even with death on intrusion. The men had similar dances. An idea prevailed, that while

these mystic rites were going on a spirit or power descended into the idol. To see it, when thus occupied, entailed death or misfortune, hence they wore large masks carved from drift-wood, supported by a band behind the head and a cross bar held in the teeth. These had holes so cut, generally in the nostrils of the mask, that they could not see anything before or above them, but only the ground about their feet. After the dances were over, images and masks alike were destroyed. In further illustration of the same idea, the dead, supposed to have gone to meet the spirits in another sphere, had one of these placed over the face for requisite protection beyond the grave.

The methods of burial among the Aleüts, at the advent of the Russians, were as follows:

Poor persons were wrapped in their clothes, or in mats, and laid under some over-hanging rock, with a mask over their faces. A little drift-wood was sometimes placed under the body, but very rarely any weapons or implements. Often, to enclose the bodies, a sort of artificial cave was made by building up a wall of rough stones outside the bodies, until the face of the over-hanging rock was reached; when the wall was closed over with earth and turf.

This sort of burial was noticed by me in several localities. On the island of Amakna'k, close to Iliuliuk Harbor, Unalashka, a number of places were discovered where such burials had been made. No implements were found in them, except one bone arrow with its shaft and some fragments of masks. There was usually some coarse matting, or sea-lion skin, about the bones, the remains of the original wrapper. The bodies appeared to have lain at full length on their backs. The bones were usually much injured by falling fragments of stone from above, and the percolation of moisture through the crevices of the rocks. They had also been gnawed in many cases by the lemmings indigenous to the islands.

The same method was also noticed in the islands to the westward, especially at the island of Atka, where, on one of the small islets in Nazan Bay, under an over-hanging rock, fourteen or fifteen crania were obtained in good condition. The other bones were much decayed, and appeared to have been disturbed. A pair of ribs were found coössified from the capitulum to the distal extremity, but without any sign of disease by which this peculiarity might have been induced. The only implement found was a celt, or stone axe of a chisel shape, of a greenish slaty stone; which is remarkable as the only celt found in all the Aleutian Islands during four years exploration; during which time other implements were collected by hundreds.

The crania in this locality were huddled together on the surface and were visible from a little distance. The natives of the adjacent village believed that these skeletons held feasts and festivals, and that on returning to their original shelter they did not always take up the position that they had previously occupied.

The remains of those whom the early inhabitants held in honor, especially

wealthy persons having large families, or distinguished by their ability and success in the chase, were differently disposed of.

They were said to eviscerate the bodies through the pelvis; and then, to remove fatty matters, they were placed for some time in running water, and afterward taken out and lashed into as compact a form as possible. The knees were drawn up to the chin, and the bones were sometimes fractured to facilitate the consolidation of the remains, which then were carefully dried. They were placed in a sort of wooden frame, with their best clothing and most valuable furs, and secured with seal skin or other material so that the package should be as nearly water-proof as possible. This frame or coffin was then slung to a horizontal bar supported by two or more uprights, and left hanging in the open air or in some rock-shelter. Much grief and continued lamentations occurred after a death. These were often evinced by songs composed for the occasion, and the natives usually attended the body to its final resting place, in an irregular procession, beating drums or tambourines, and uttering loud cries. It is related that the mothers sometimes placed the body of a deceased infant in a carefully carved wooden box. This was often kept for a long time near them in the yourt, where the mother would watch it with the greatest tenderness, wiping away the mould and adorning it with such ornaments as she could procure. Implements or weapons were rarely or never placed in the case with the body, though occasionally a wooden dish or kantag' containing food, was inserted. But about the bodies, or their envelopes, utensils, and carvings were often deposited in large numbers. The cases containing the remains of infants were suspended from wooden arches, of which the ends were inserted in the ground, and these were usually placed under some rock-shelter.

It will be observed that in this paper I refer only to the methods in use among these people about the time of their discovery, a century and a quarter ago, and not to the more ancient usages which preceded them, of which we obtained many evidences which may properly find a place with the records of our observations on the shell heaps, in another paper. These included other forms of burial beside those now mentioned, though the caves were frequently used for the purpose. It is proper to remark also that the civilized form of burial, in the earth, has obtained among them since their conversion to Christianity, a period of some eighty years.

Still another method of disposing of the dead is noticed by the early voyagers.

The natives, especially in their winter villages, were used to construct large, half under-ground habitations, often of extraordinary size. These were so arranged by internal partitions as to afford shelter to as even as many as one hundred families. No fires were built in the central undivided portion, which was entered through a hole in the roof, provided with a notched log by way of ladder. In the small compartments each family had its own oil lamp, which,

with the closely-fitting door of skins, and the heat of numerous bodies in a very small space, sufficed to keep them warm. We learn that the bodies, while being prepared for encasement, as above described, were sometimes kept in the compartment which they had occupied during life until ready for deposition elsewhere. We also know from early accounts, proved true by our own excavations, that the bodies of the dead, in the compressed position before mentioned, were sometimes placed in the compartment, laid on their sides, and covered with earth with which the whole compartment was filled and then walled up. It is stated that others in the same yourt continued to occupy their several compartments after this, as usual, a proceeding very different from that of the majority of the Innuit, who usually abandon at once a house in which a death has occurred.

This is only one of several facts which show that the Aleüts did not feel that repugnance to, or fear of, the dead which is generally characteristic of tribes of that stock. In our excavations at the head of Uhlakhta Spit, Amaknak Id, Unalashka, we found in the remains of an old yourt several skeletons so interred.

It is an interesting and pregnant fact that, as we examine the prehistoric deposits in the order of their age, among the Aleutian Islands we invariably find that the older they are, the more the relics and evidences of customs approximate to the typical continental Eskimo type; and also that in the earliest historic times, customs were still in vogue among the Kaniag'mūts that had already passed away among the Aleüts, (though formerly practiced, as evinced by the remains in early deposits in caves and shell heaps,) and that those customs, or some of them, still obtain among the northern and western Innuit, though now extinct among the Kaniag'mūts. The gradual differentiation, from the typical Eskimo to the Aleutian type, is thus clearly set forth in an unmistakable manner.

Another modification of the cave burial, appertaining more particularly to the Kaniag'mūts, but also practiced by the Eastern Aleüts adjacent to the Kaniag'mūt tribes, will be more properly considered with the usages of the latter people further on.

From the present priest of Unalashka, a tolerably well educated and very intelligent man, himself a native Aleüt, many details in regard to localities and customs were obtained in 1871.

He informed us that in the Island of Adakh, caves and rock-shelters were in use by the early natives for burial purposes, and that the reports of hunters confirmed the existence at the present day of some of these remains, with masks and other articles in their proximity.

During my visit to Adakh in 1873, I was unable, for want of a guide, to confirm this; though I have no doubt of its truth. We found evidences, however, of an earlier and different form of burial.

We discovered in that year at Constantine Harbor, Amchitka Island, a skeleton interred in the earth, together with the remains of a small iron celt and some old fashioned beads, showing that this interment was subsequent to the Russian advent; though at the time of our visit the island had been uninhabited for nearly forty years.

On the island of Unalashka, at Chernoffsky Harbor, some years ago there still existed remains accompanied by masks and carvings in rock-shelters near the village. There was also a unique wooden tomb, constructed and carved with the ancient stone implements, in a very careful and elaborate manner, with the door so hung on wooden pins that it might be raised and the contents viewed, and by its own gravity would close itself on being released. In this tomb were the remains of a noted hunter, a toyon of eminence among the natives, surrounded by an enormous store of sea otter skins, garments, &c., all then in good preservation.

Since that time this tomb is said to have been rifled by an agent of one of the trading companies, and to have fallen into complete decay.

The most celebrated of these burial caves was situated on the island of Kaga/mil, one of the group known as the Islands of the Four Mountains, or Four Craters. This group is not at present inhabited, except for a short period during the hunting season of each year.

I visited these islands in 1873, but as the shores are precipitous, and there are no harbors, the weather was too boisterous to permit us to remain in the vicinity. Even if we had landed, it is probable that we could have done little without a guide.

The traders in the islands were aware of the existence of this cave and its contents, and one of them, Capt. E. Hennig, of the Alaska Commercial Company's service, had several times attempted to reach it unsuccessfully.

In 1874, however, the weather being quite calm, and the presence of a hunting party, which he was taking away from the island, enabling him to find the cave without delay, he visited it and removed all the contents, so far as is known. On their arrival at San Francisco, the company, (who had instructed their agents to procure such material for scientific purposes when compatible with the execution of their regular employment,) with commendable liberality, forwarded them to the National Museum at Washington. Two of the mummies were given to the California Academy of Sciences, but all the rest were received by the Smithsonian Institution. It is unfortunate that but few details were obtained as to the exact disposition of the bodies, or mummies, in the cave; the situation and form of the latter, and other particulars which would have had great interest. From accounts received from Father Innokenti Shayesnikoff, previously, I am led to infer that the cave is situated near the shore at a point where the coast is precipitous and without a beach, the landing being on large, irregularly broken fragments of rock, the talus from the cliffs above.

The island contains active volcanoes, as I am informed, and in the immediate vicinity of the cave are solfataras, from which steam constantly arises, and the soil is said to be warm to the touch. The rock is of a whitish and ferruginous color and sharp grain. Specimens examined by Dr. Endlich, of the Smithsonian Institution, prove to be a siliceous sinter, containing a little alumina and soda, and some hydrous sesquioxide of iron. In the spectroscope traces of lithium and potassium and, possibly, a trace of lime were seen.

From this, and from the fact that the atmosphere of the cave is said to have been quite hot, rendering it uncomfortable to remain in, it is possible that the cave itself may be the crater of a small extinct solfatara.

With regard to the age of these mummies, as they may be styled, I was informed, in 1871, by several of the more intelligent natives, that they fixed the date of the earliest interment in the following manner: It occurred in the autumn or winter. During the following spring the first Russians ever seen by the natives of the Four Craters, arrived in the vicinity. These may have been Trapesnikoff's party, which left Kamchatka in 1758, but did not reach Umnak until 1760; or they may have been that of the infamous Pushkareff; or possibly of Maxim Lazeroff; but, in any case, they can hardly have been the expedition of Bering. In 1757 Ivan Nikiferoff sailed as far east as Umnak, being the first Russian to do so; except those of Bering's Expedition, who did not land on any of the Andreanoff group; though in 1741 they saw the shores of numerous indeterminate islands from a distance. The earliest date therefore which we can assign to these remains would be 1756, making the oldest of them about one hundred and twenty years old.

At all events they possess great interest as the best preserved relics of the state of things as they existed immediately prior to the Russian occupation, and when their pursuits and handiwork had not been modified by the introduction of any of the adjuncts of civilization.

The tradition regarding these particular remains was noted by me from the account of the Rev. Father Innokenti, and the same account was reduced to writing by him, and forwarded with the mummies to the Smithsonian Institution.

A translation of it is herewith given:

"On the island of Kagámil lived a distinguished toyon, a rich man, by name Kat-háya-Koochák. He was a very small man, but very active and enterprising, and hence much respected, and even feared by the natives of the adjacent region. He had a son 13 or 14 years old, whom he fondly loved. He built him a little bidarka (or skin canoe) and painted it handsomely. When the bidarka was done the son begged earnestly to be allowed to try the boat on the sea. After much urging the father permitted him to go with the injunction not to go far from the shore. The father himself assisted the son, and saw him safely launched from the beach into the water, and then went to his yourt or 'barra-

bora' and watched the boy lest he should go too far from the shore. The boy saw on the sea a diving bird, (diver,) followed it, and shot at it with his arrow. The diver retreated further and further from the shore. The father saw him (the boy) getting farther away, and shouted to him, but the child could not hear him; and as it was getting dark the father presently could not distinguish the boy any longer, and returned home. The boy went further and further until finally he perceived that he could not distinguish the island from which he came, and that he was far from home. He turned toward the shore, paddling slowly, admiring his boat as he went, until he was not far from the beach, when he heard some one coming after him. He increased his speed, but did not gain on the pursuer who began to throw arrows at him. The boy did not know who the person was. On another island lived an Aleüt, whose wife was the boy's sister; but as the Aleutian custom was, this Aleüt did not take her to his own island, but often visited her. This evening, as usual, he was going to his wife, he saw a little bidarka with a child in it, and pursued it to find out who it was, and discovered that it was his wife's little brother. He admired the swiftness of the boat and the skill of the boy, but continued to throw arrows at him with the intention of frightening him, and threw one so carelessly that it struck the boy's paddle, and he, losing his balance, was overturned. The brother-in-law soon came up with the boy, and endeavored to right the canoe, but without success, and so the little brother was drowned. The Aleüt wept over him, and thought at first of abandoning the boy's body where it was, but finally towed the boat to the shore near the boy's own island, and left it in a mass of kelp so that it might not drift to sea; but fearing the anger of the father, he went away without having seen his beloved wife. This was in October or November. Morning came, and the boat was discovered in the kelp; and they told the father, Kat-háya-koochák, who sent out to see what it was, and they went and brought it back. The father recognized his son's canoe, which he had built in the previous winter and summer.

"What could be done? He wept and lamented over the boy, remembering the love and care he had bestowed upon him, and directed the body to be brought into the casime, (largest house of the village,) called Ulagamak, and dressed in his handsomest parka and placed in the place of honor. He ordered that no one should make any festivity, no tambourines were to be beaten or singing done. He sent out to all his friends to say that he, his son, had been drowned, and that they should come to the funeral. On hearing this, the people of the Four Craters immediately repaired to the island of Kagámil. When they had arrived, Kat-háy-a-koochák commenced to prepare for the funeral of his son. When all was ready, and the day began, he ordered him to be taken to the old burying place, according to the Aleüt custom, with songs, lamentations, and beating of (the Aleüt) tambourines, in company with all the assembled natives, which was done. Among the people was also the sister of the dead boy, who was about to have a child. A stone lay across the path, which all had to pass in going to the burying place. There was a good deal of snow on the ground, partly melted by the warm weather. The sister, who was walking with the father behind the corpse with her face covered and constantly weeping, and was barefooted, in carelessly stepping on the stone, slipped, and fell on her back, bringing on a premature delivery and fatally injuring herself; dying very soon afterward. What could Kat-háy-a-koochák do? He went out to bury one, and, instead, had three to bury—his son, daughter, and grandson. He stopped the procession and had his son brought back to the house (barrabora) and gave orders for the funeral of his

daughter and grandson, but did not know where to put them, for the season was late, snowy, and very cold. So he gave orders to the people to clear out his "cache" (or receptacle for provisions) which was in a cave near the village. He had all his property brought out of it, had the bodies covered with wooden boards, which he ornamented with colors, and then placed son, daughter, and grandson in the cave, with lamentations, singing, and beating tambourines, as he had at first intended. He had also the little bidarka placed with his son, and everything belonging to it—paddles, arrows, &c., and many sea-otter and fur-seal skins, and other articles. He then brought out all that he had, and told the assembled people to eat and drink as much as they liked, while he, Kat-háy-a-koochák, without ceasing, wept and lamented for his family.

"After the ceremonies he told the people that he intended to make a mausoleum of this cave for his whole family, and that he wished to be placed there himself, and desired that his wishes be exactly complied with.

"Soon after Kat-háy-a-koochák himself died of grief for his family, and was placed in this cave according to his desires; with all his wealth, such as sea otter and fur seal skins, household goods, wooden dishes, arrows, spears, and other weapons. All of his family that were left behind him were buried in the same cave. And this is the end of the recitation of the name and accomplishments of the distinguished chief, Kat-háy-a-koochák.

"Since then the island of Kagámil has became uninhabited by Aleüts, and the bodies have been undisturbed until this year (1874.) And these bodies, probably, according to the saying of the older Aleüts, were placed there about 1720 to 1730, so that those first buried in the cave must have lain there 144–154 years."*

CONTENTS OF THE CAVE.

The case (17478) on which the most care and work had evidently been spent, was naturally supposed to be that of the old chief or his son. It was opened with great care and careful notes of the disposition of the envelopes, were taken on the spot. In describing the manner in which the body was encased, I have preferred to follow the operation in the manner in which it was originally performed, rather than the reverse order in which the unpacking was done.

The body was placed in a sitting posture with the knees drawn up, slightly inclined toward the right side. The major portion of the tissues and muscles had crumbled into fine dust. The skin, however, remained intact, to some extent, over the limbs, with the exception of the hands and feet. We did not uncover the remains sufficiently to determine whether anything had been inserted into the visceral cavity, as to do so would have risked destroying the continuity of the body entirely. The cranium was still covered with the parchment-like remains of the scalp, to which black coarse hair, about six inches long, still adhered. No signs of the tonsure were visible. The bones of the face were quite uncovered, and somewhat separated. The lower jaw was separated at the symphysis, and the frontal bone had sustained an apparently post-mortem

* See previous remarks in relation to the probable age of the deposit.

fracture. The sutures were tolerably well closed, except those of the lower part of the face, the supra-orbital ridges were very slightly marked, the forehead was high and not sloping; the styloid processes were remarkably long and slender, and the whole skull exhibited a remarkable tenuity, being quite translucent, and thinner, on the whole, than any other adult cranium I have ever examined. The skull exhibited the usual Eskimo characteristics, of a well marked longitudinal median ridge, and somewhat pyramidal form, but was unusually well shaped, though not of as great capacity as many crania of the same race which have passed through my hands. The teeth were but little worn, and the whole appearance of the remains indicated that they were those of a nearly adult male; from which we may reasonably infer that they could not have been those of the old chief or his son, as related in the tradition, unless the boy was older than the story states.

Passing up from behind the shoulders over the head and down upon the breast was a strip (17469) of very fine grass matting which must have taken many months to manufacture. The mesh is one peculiar, so far as I have observed, to the western Eskimo and Aleüts, which, when compactly woven, gives a twilled appearance to the fabric, and will be more fully described further on. The pattern consisted in transverse stripes, somewhat raised above the general level, and which comprised two or three stitches only in width. This matting, it should be observed, is made of the fibre of an *Elymus* (which is treated as we treat hemp or flax to obtain the fibre) and not of the crude grass itself. The raised stripes are made of the outer coat of the straw, instead of the macerated fibre which forms the body of the fabric, and were originally colored red, while it may be supposed that the rest was of the normal straw color. The stripes are about three-eighths of an inch apart in the middle of the mat, the interspaces gradually widening to an inch and a quarter toward the edges. At intervals of an inch and a half, transversely to the stripes, are inserted rows of small tufts, composed of feathers (perhaps of the *Leucosticte*, as they appear red) and of fine deer hairs, which are much used by the Eskimo for ornamental purposes. These are taken from between the hoofs of the reindeer, and are of a different texture from the hair of the rest of the animal. They appear to issue from the scent or oil glands which are situated there. I have often noticed the natives saving these small tufts, which are articles of trade among them. The tufts of the puffin (*Mormon cirrhata*) or the light white feathers which appear on the cormorants during the breeding season are also used for the same purpose, but are less highly valued, being much more easily worn out.

The edges of the mat were woven to make a selvage border and further sewed over and over with a twisted thread of two strands of sinew, which had originally fastened on a narrow strip of parchment, made from the œsophagus of the

seal, colored red. Fragments of this still adhered to the border. In this mat there were about thirty strands to the inch of weft and twenty-five of warp.

The whole body was next wrapped up in another mat of coarser texture, but more intricate pattern, which was strongly stitched together in front with finely divided whalebone or baleen. (17470.)

This mat had both longitudinal and transverse stripes. The central transverse stripe was composed of a single series of one black and two straw-colored stitches or threads, on each side of which were four rows of red stitches, and outside of these, on each side, another row like the central one, and lastly, a single row of red stitches sewed into the fabric, which last kind were in all cases of the external portion of the grass, somewhat elevated above the rest of the fabric. On each then followed an interspace of plain matting about an inch wide, then three lines of red stitches separated from the interspace by a single row on each side of alternate black and white stitches, then another interspace divided from the next by another variation of the pattern of the stripe, composed of the same kinds of stitch, and so on to the border, where there was a chequered selvage edge, with tails or strips of seal skin sewed on at the end of the stripes. Longitudinally, the stripes are crossed by wide bands, in which the ordinary threads are more or less chequered with black, and this chequered band is bordered with a pair of stout black threads on each side. Where these last cross the transverse red stripes, the red is replaced by ordinary yellow fibre disposed in the form of a cross in some cases, but the pattern is varied at different intersections. In this mat there were eleven double woof-threads to sixteen the other way. The package which had been thus formed was then put into a fine parka, (17471,) or long shirt, of bird skins; the neck and lower portion and arms being tightly tied up so that the contents were enclosed in a close sack. The feathers were innermost, as they are usually worn, and the outer side (being the inner side of the skins) was painted red with red oxide of iron. The skins were those of the puffin (*M. cirrhata*,) which is, with the murre, almost the only species used for the purpose. The feathers of these birds are less liable to come out than those of other species, hence the preference. There is also, as a rule, less fat on the inner side of the skins, by reason of which they are more easily dressed. In this case the feathers were still firmly attached and the skins still in good condition.

The outer side of this parka was ornamented by a band or yoke passing over the shoulders and completely across in front. The lower edge of this was ornamented with a fine long fringe, and, at intervals, long slender strips of sea otter fur were inserted as pendants. The seams, also, were all quadruple, the edges of the skin turned back and fine strips of hair seal skin inserted, three-sixteenths of an inch wide, with the hair cut evenly, as short as possible.

To describe in detail the wonderfully fine work contained in the ornamental

yoke, above mentioned, would take a very large amount of space, and, I fear, give but a very inadequate idea of it even then. It needs to be carefully studied to be appreciated. In order to give some notion of it it is necessary to describe the materials used in similar but less delicate work by the Innuit of Norton Sound. These ornamental bands are commonly used by all tribes of the Eskimo stock, though none approach in perfection that work done by the early Aleüts. Something similar, but of a totally different style, is used by the Tinneh Indians, whose material is restricted to deer skin, moose hair, and porcupine quills. The Innuit girl, for her work bag, requires the skin of the cod, or other smooth-skinned fish, stretched and dried, which presents somewhat such an appearance as grey marbled paper. Next, the skin of the young hair-seal, scraped and dressed very thin, and made as white as possible. Part of this has the hair cut evenly and closely till it is not longer than the pile of silk velvet. Another part is entirely deprived of the hair, and is as white as fine kid. Then of the gullet of the same seal is made a stout parchment, either white or yellow, or frequently colored red, black, or green with native pigments: oxide of iron, charcoal and oil, and a green mould found in decaying birch wood (*Peziza.*) Then the skin of fur animals is taken, and, while the soft fur is untouched, the inside, after being dressed, is colored as above; a narrow strip thus forming a pretty fringe. The white belly, throat, and leg patches of the reindeer, in summer, are carefully selected for those parts with the whitest and finest hair, which is cut to a uniform shortness. With these, and plenty of whale or deer sinew for making thread, and with needles, her repertory is nearly complete. These articles are cut in narrow strips; the finer the work the narrower must be the strip, or they may be made, by cutting into little squares, into a chequered pattern; and even here the ornamentation does not stop, for in the seam itself are frequently inserted feathers or deer hairs, such as have been previously described. Very few civilized work-women could rival the finer kinds of this work, even with the most delicate needles, and when we recollect that the ancient Aleüt women worked with awls formed of bird's bones, ground on a stone, the delicacy and minuteness of their stitches becomes more wonderful still. In the present case the yoke is an inch wide, exclusive of the fringe, and one of the strips is a quarter of an inch in width, leaving for the twelve other strips, of which it is composed, (and which are to be distinguished only by the aid of a glass,) scarcely more than six-hundredths of an inch each. Two of these strips are further ornamented, one being black with white reindeer hair stitches so intersected as to form a succession of small white crosses on a black ground; the other with the intersections of the white stitches at the upper edge, instead of the middle, forming a continuous zigzag line on a red base. The order of the strips, reckoning from above, is as follows: 1, finely trimmed hair-seal with the hair on, but cut to five-hundredths of an inch in length; 2, red colored parchment; 3,

like No. 1; 4, like No. 2; 5, black, with white crosses; 6, red parchment; 7, like No. 1; 8, like No. 2; 9, quarter inch strip of dark red parchment; 10, parchment of a lighter red; 11, parchment blackened with something containing shining grains, like micaceous oxide of iron; 12, zigzag line, in white, on red parchment; 13, strip of hair-seal skin with the hair trimmed as before on its lower half, but removed from its upper half, which is colored red. In the seam between these last two strips are inserted the filaments of which the fringe is formed. These are of young hair-seal skin cut seven inches long and one thirty-second of an inch wide. The hair is cut as close as possible, and, at short intervals, removed entirely, giving the filament a jointed appearance, like an insect's antenna. At the free end a minute portion of the hair is left uncut, forming a little tuft. These filaments are inserted in pairs (eighteen to the inch) in the seam, or thirty-six in all to the inch. The strips of sea otter skin, with which the neck of the parka was trimmed, and also those inserted into the fringe, &c., still retained a bright glossy appearance.

Outside of the bird-skin parka was next placed a strip of tolerably fine matting, (17472,) extending from under the back, up over the head, and down over the face. A small and exquisitely fine mat, (17474,) about twelve by fourteen inches, was laid over the breast, and then, from side to side, it was rolled in a larger and much coarser mat than any yet mentioned (17473.)

The face cloth was ornamented with longitudinal black stripes of two or three threads each, chequered by the normal straw colored threads of the warp. The black stripes were about six inches apart, These were crossed by transverse stripes—composed of six threads, the two outer pairs red, and the inner pair chequered black and white; and of four threads, the two inner red and the two outer chequered—alternately, at intervals of two and three-fourths inches. In the middle line short tufts of black fibre, on each side of the transverse stripe, were introduced, and here, as in other cases, the red threads were replaced by white, varying the pattern. It is evident, from careful inspection, that these red threads were sewed in after the mat was finished, and not originally woven in. They also are not of the fibre of the grass alone, but retain the outer surface of the polished straw. The black threads, on the contrary, form part of the primitive fabric. Here we have fifteen warp threads and six pairs of woof threads to the inch.

The breast mat is another marvellous specimen of grass weaving. The stripes are all transverse to the fabric. There are six principal stripes across the middle portion, composed of three inner red, two outer yellow, and two outermost black threads of woof. Between each pair of primary stripes is a secondary stripe of two red threads enclosing one chequered, with one black and two white stitches, alternately. Between the primary and secondary stripes is a tertiary stripe of two chequered threads, alternately black and white single stitches, enclosing a

single red thread. The six primary and intercalated stripes, with the body of the fabric, cover a space of eight inches, arranged at exact intervals. Outside of this series, at each end, are three more of the tertiary stripes about an inch apart. Longitudinal to the fabric are ten rows of tufts of the crimson-tipped feathers from the breast of the gray-necked finch, (*Leucosticte griseinucha*,) mingled with the fine soft deer hairs before mentioned, inserted at the edge of the stripes. The middle (secondary) stripe has tufts on each side, pointing respectively toward the top and bottom of the mat. All the tufts to the stripes above it are inserted on the upper side and point to the top of the mat; and all below it are inserted on the lower sides of the stripes and point to the bottom of the mat. The lateral edges of the mat have a selvage edge, but, in addition to this, to obviate fraying out, the whole was bound with a dark colored strip of parchment. Where the tufts join the stripes white threads are inserted into the red lines, as in previous cases. There are eighteen threads to the inch longitudinally and twenty-four transversely.

The outer mat of all is of much coarser texture and of a different mesh from the others. Previously the warp-threads have been composed of bundles of fibre crossed by similar double woof-threads. The two threads of the woof alternately passed above and below the warp-threads, which, in weaving, were separated in halves. In one line the adjacent halves of adjacent threads of the warp were caught in the twist of the two woof-threads, and in the next the separate halves were caught together again, and, this alternation being constant, the spaces between the threads, if stretched apart, would be of a lozenge shape. The woof-threads, as they crossed each other between the threads of the warp, received a single twist.

In the outer mat, however, the bundles of fibre composing the warp are kept constantly intact, and the apertures, therefore, would be rectangular.

In this mat the only pattern consists of large squares, formed by two or three black threads of warp about seven inches apart, and cross lines, of which one of the pairs of woof-threads is black; the other pair, one black and one white; forming a line, one half of which is chequered as the black or white thread alternately comes to the top. In this mat there are ten threads of warp and three pairs of woof-threads to the inch.

The body, as now encased, formed an oblong, somewhat irregularly, shaped bundle. The case into which it was placed must now be described.

A stout bar of wood sixteen inches long and about two and a half inches thick, with the angles rounded off, formed the basis of the structure. Into holes in this bar, near each end, were inserted two staves, one of each pair two feet long and the other three and a half feet long.

The long and short rod at each end were put in and lashed with baleen strips at an angle of 30° with each other, and also diverging somewhat outward. An

elastic strip of wood was then bent so as to make a hoop of somewhat oval shape, which was securely lashed with baleen thongs to the four staves, at the points where they intersected it. Then to form a sort of bottom to this receptacle, inside the staves and just above the transverse bar, a large kantag or wooden dish, of the kind made by the Eskimo of the mainland, was securely lashed, by passing thongs through holes cut in it for the purpose. Over that portion of this frame which was above the kantag, hair-seal skin with the hair turned to the outside was securely sewed. It is at once evident that this frame could not stand alone, except by resting on the side, but it was not intended to rest on the ground, but to be suspended in the air; for which purpose two very stout and strong loops of sinew braided in square sennit, repeatedly doubled and served over and over, were attached to the sides of the oval rim. The interior was then lined with dry grass, and in the bottom another, smaller, kantag was placed, which, when examined, was full of something resembling ashes. The bundle containing the remains (which had, as was their custom, been thoroughly dried beforehand, though whether the viscera had been replaced by dry grass, as is said to have been the practice, we did not determine by inspection) was then inserted, the end in which the feet were situated being placed in the kantag. Then all around the bundle dry grass was firmly packed. Over the body were laid, first, three large fine sea-otter skins, which still retained the hair in tolerably perfect condition. Over these was laid another parka of bird skins, folded up, and much less elaborate than the one previously described. Then over this a number of seal skin loops attached to the rim of the frame were securely laced together with a cord made of sinew. The top was then covered with hair-seal skin sewed on to the edge of that which covered the sides of the frame; over this was laid a piece of water-proof stuff liked that used for kamlaykas or gut shirts. This was in a very much injured condition.

In order that the lower portion, which was only confined by the seal skin sewed over the frame, should not burst open with the weight, the following precaution was taken: A broad strip of thin wood (one-fourth to three-fourths inches thick by seven and one-fourth inches wide) was steamed until pliable and bent into a somewhat rudely rectangular ring, and the two ends, which overlapped about four inches, were pegged together with wooden pegs. To give an ornamental finish to the whole it was painted red, and four pegs—shaped like a horseshoe nail, with rather large heads—were inserted at the edge of the overlapping end. These pegs were made of walrus ivory, and blunt at the point. As they could exert no tension on the wood, toward holding it together, it is probable that they were intended solely for ornament. Through four holes cut for the purpose, strong cords, made of sinew, were lashed and laced through holes made in the seal-skin cover to the wooden rim of the frame. The whole wooden band was then drawn up tightly and encircled the lower portion of the

case, adding greatly to its strength. Over all this was wound a net, which appeared to have seen previous service. It was made of sinew twisted in two strands, and with a mesh of about four inches diameter. The lower edges of the net appear to have been hitched over wooden pegs, which project from the inner lower edge of the wooden band above described. Over the first net, a new net composed also of sinew, but of three braided strands, and of six-inch mesh, was again wound and secured with strong cords of sinew, braided in what seamen call "square sennit." The braiding was most evenly and beautifully done, equal to any modern work of the kind, and, in most places, the cord still retained much of its original strength. Under the net was inserted a piece of wooden body-armor, (17249,) composed of small round rods of proper size, united by sinew cords, and with nicely carved wooden pieces about the arm holes. This is the only piece of this aboriginal armor known to be in existence. It was fastened behind with two loops of sinew, into which wooden buttons were inserted. The small rods of which it is composed were about three-fourths of an inch in diameter, and painted red.

This armor, slight as it was, must have been a tolerably good protection against the bone and stone arrow heads of the natives. There was also found, stuck in the netting of this mummy case, when received at the Institution, a short crutch-handled stick, with the point a good deal worn; evidently one of those which the natives still use to push their bidarkas about with in shallow water. (17443.)

Whether it was originally where we found it, is not certain, as the mummies had been subject to much handling and inspection in San Francisco before they were forwarded to Washington. No information of consequence was received with them in regard to whether any of them were still suspended when found, and the absence of any statement in regard to the matter, renders it likely that they were not. The cords by which they were hung up, in the course of years, would be likely, and would be the first portion, to give way. Yet that they were originally so elevated is beyond doubt, as all of the packages are provided with loops for the purpose, and we know by the accounts of the early voyagers, that the natives were particularly careful to suspend the bodies of those for whom they had special regard, in such a manner as to prevent their touching the ground.

Of the packages containing remains, two were given to the California Academy of Sciences, and two others were so much injured that only the crania (which will subsequently be referred to) were collected. Of those remaining, three were of infants and the others of comparatively mature individuals.

I. (17482.) Rolled up very compactly in tanned sea-lion skin and lashed with "square sennit" of large caliber. The viscera had evidently been removed, but the muscular and cutaneous tissues were in tolerable preservation. Under the

lashings, which were not disturbed, were tucked feathers of some raptorial bird. These had been trimmed off, and colored red with some pigment. The individual was apparently adult.

II. (17481.) Wrapped in a coarse but neatly made grass mat striped with black strands, and lashed with a cord half an inch wide, made of sinew braided in three strands. The cord for suspension was made of similar braids of dry grass, exactly similar to that now in use among the Aleüts for various purposes. It was three-quarters of an inch in width. The body, of an adult individual, probably a male, was wrapped in a common bird-skin parka, and another mat similar to the external one.

III. (17479.) This one was in a first-rate state of preservation, even the nails of the fingers and toes being *in situ.* The viscera had evidently been removed through the pelvis, as the cutaneous tissue of the abdomen was intact, while the pubic region showed signs of having been opened. There were no evidences of any substance having been introduced into the interior of the body. There were no incisions for labrets nor for earrings. The hair was black, and about seven inches long—well preserved. Traces of a light moustache and beard were visible. The bones of the left fore arm had been broken in order to force the hand into a position by which the package might be made more compact. No other injuries were noticed. The individual was a male of middle age, and had lost several teeth. The coverings were in every respect like those of Nos. V and VI, but were in bad condition, so that it was judged advisable to remove them entirely. It was wrapped in a plain bird-skin parka, rolled in a rough mat, lashed with sinew braided in three strands. Over this was a cover of sea-lion skins deprived of the hair, and sewed together with rough untwisted sinew.

IV. (17480.) A child of four to six years of age. Inner covering the usual bird-skin parka, surrounded by a pretty good piece of matting; the whole covered with dressed seal skin. The cover was made of a number of pieces sewed together, but the edges did not quite meet in front, where the matting was exposed. The whole was lashed with strips of raw, untwisted whale sinew, and a little very large "square sennit."

V and VI. (17485–6.) These two were adults, and had evidently been laying, one upon the other, for a long time, with only a coarse mat between the packages. They did not present any evidences of having been suspended. The coverings were bird-skin parkas covered with a coarse mat, enclosed in seal hide, lashed with "square sennit." That one which had lain lowest, was not so well preserved as the other. They were apparently females.

VII. (17487.) Was covered with sea otter skins, sewed up very strongly in seal hide and lashed with "square sennit" of the largest size, made of whale sinew. The coverings were not removed sufficiently to admit of examining the remains, which appeared to be those of a youthful person.

VIII. (17484.) Contained the remains of a small infant, of which the tissues were reduced to dust. About the bones were traces of bird skins. Outside of this were sea-otter skins, repeatedly doubled and lashed on with seal hide thongs. Outside of this was a covering, apparently of fox skin, but the skin had become so much injured that only a mass of matted fur remained. This had been secured with "round sennit" of four strands and braided sinew of three strands. The outer case, if there had ever been any, had been removed.

IX. (17483.) Contained the remains of an infant of two or three years of age, and was originally very carefully prepared. The case consisted of a wooden hoop forming the front, two parallel short sticks at the bottom, and two longer ones at the back, severally lashed to the hoop at one of their extremities, and to a short transverse stick (forming the posterior edge of the bottom of the frame) at the other. Over the back, sides, and bottom of the frame was sewed hair-seal skin, with the hair turned inward. The sewing was done with thread twisted of two fine strands of sinew. The body had been wrapped carefully in matting, covered with sea-otter skins, then packed, with twisted hanks of dry grass, firmly into the case, and the front of the latter covered with a piece of exceedingly fine matting. This was ornamented with longitudinal and transverse stripes similar to those described in the large mummy case, and with white crosses worked into the fabric at the intersections of the stripes. The lashings were of square and round sennit.

X. (17475.) Contained the well-preserved remains of a child about a year old, wrapped in a piece of the material of which the gut shirts or kamlaykas are made. This consists of the entrails of sea-lions or seals, washed, split, and dried into a glistening kind of parchment. These strips are then sewed together with double seams, and, usually, narrow strips of red parchment are sewed in the alternate seams or parts of them by way of ornament. This forms a light, translucent water-proof material, very tough when damp, but rather brittle if very dry.

Over the upper part of the body a fine, small mat was laid resembling one already described, and like it, ornamented with the red feathers of the *Leucosticte*, and the light hair from between the reindeer's hoofs. The head of this specimen was gone, but the tissues were well preserved, and from certain impressions in the dry skin of the back, it would seem to have been laid on a coarse piece of matting or basket work. It did not seem to have ever been tied up, or, if it had, no traces of the envelope or lashings remained.

The two skulls referred to had evidently been taken from bodies of more recent date than any of the others. This is confirmed by the state of the tissues which did not resemble the others, in color or consistency, being fresh and firm and still retaining somewhat the fresh color of recently dried animal matter. The skull of one, (17477,) a female, bore other testimony to its later date, as the

frontal and nasal bones were much affected by a species of caries, evidently the result of syphilitic or scrofulous disease. If the former, it was the result of intercourse with the Russians, and the individual may have belonged to a period twenty or thirty years later than those previously described. The hair, originally black, had faded to a light brown, and was very short.

The other skull (17476) was that of a male, and chiefly remarkable for its great breadth as compared with its height, and for possessing, in addition to the usual coronal ridge, a well-marked transverse ridge across the skull from side to side, somewhat behind the ears. Some of the hair still remained, and was long and black. The teeth of both were much worn down, and in the female skull the anterior molars had been worn until the nerve cavity was fully exposed, and signs of ulceration were exhibited about the fangs of the two first molar teeth. The cylindrical shape and soft character of the enamel, which rapidly wears away, is a characteristic of the Innuit teeth. It is due, not so much to the mixture of gritty substances with the food, which does not often occur, as to the peculiar character of the teeth themselves, and the great use that is made of them by most of the Eskimo in chewing sinew, seal-skin line, &c., to prepare them for various purposes. In skinning an animal, stretching or hauling taut a line, or twisting or braiding a cord, the Eskimo takes it in his teeth.

With these human remains were various articles, which were also forwarded, and are here briefly catalogued.

1. (17443.) A pushing stick with a crutch handle, carved and painted red on the top of the handle and on a broad groove around it. On the side of this was engraved an oval, with short lines perpendicular to the circumference, extending outward from it. This was probably a mark of ownership, such as most natives put on their weapons and utensils. A string of two-thread twisted sinew was pegged into a hole in the border of the oval to secure the implement to the bidarka at sea.

2. (17444.) A portion of the keel of a bidarka.

3. (17454–17459.) Two small and four large kantags of the usual character, with internally concave bottoms and perpendicular sides, bent into an oval or rounded rectangular shape by steaming, and secured by wooden pegs. Also one high square kantag, (17453,) with very thin light sides, such as the natives use for picking berries in. These are precisely such as the continental Innuit use to-day, except where the traders have introduced tin pails and dishes. They were probably derived from the mainland, and obtained by barter, as the inhabitants of the Island of St. Lawrence and the Diomedes obtain their kantags from the continental Innuit at the present day.

4. (17445.) Remains of a common wooden visor, such as the Innuit use at present to protect their eyes from the glare of the sun on the water when in their

kyaks. It had been smeared with black paint, and an oval pattern, bordered with two lines, had been scratched through the black paint into the white wood.

5. (17464.) A fine and carefully made basket about six inches deep and twelve inches across, made exactly like the modern ones. It had three red stripes around the upper border, to which was sewed a strip of fur-seal skin. It was laced up with a thin strip of baleen, and had a short piece of square sennit, rudely knotted, attached to it.

6. (17461.) A little coarse grass basket, with the straws at the upper edge turned and woven in so as to form a selvage border. It was about three inches high and two in diameter. It contained some shreds of dry sinew; a dried orchis root, such as the natives still eat; a piece of bird skin, with a strip of fur-seal skin sewed to it, and a bracelet of rings made of bird's claws, (17264.) This last is exactly similar to one seen by me among the Magemūt Eskimo of the north end of Nunivak Island, in 1874. I purchased a little carved box, and in it were several of these rings, as well as the yellow granulated portion of the bill of *Mormon corniculata*, the horned puffin. I could not then imagine what they were for, nor do I yet know the use of the pieces of the bill. Doubtless they are used in some way for purposes of ornament. The rings are made by pulling off the horny portion of the sharply curved claw, and inserting the point of one into the core of another, until a ring is formed; as children are wont to make rings of honeysuckle and larkspur flowers. When a sufficient number of these rings are collected, they are strung into a bracelet.

7. A number of loose articles which had formerly been in one of the baskets. These included several loose pieces of red pine bark, (17267,) some of them with resin adherent to them. This may have been used in lieu of wax on their threads. The bark had been whittled, and I found by wetting it and rubbing it on a clean piece of pine wood that it communicated a red stain to the wood. It may have been used for this purpose also, and perhaps as tinder besides, as one of the pieces was burnt in several places. It is almost needless to say, as no timber exists on the islands, that this must have been derived from drift-wood, carried from the coast about Sitka. The Yukon and Kuskoquim regions possess only spruce trees which have not this kind of bark.

A small roll of birch bark, (17268,) also derived from drift-wood, but probably from the Yukon region. What they did with birch bark I am unable to fully explain, but they preserved it very carefully. It is almost indestructible by decay, on account of a resinous principle which it contains. I found a little case made of this bark containing metallic pigments, red clay-ironstone, and graphite, in a very old pre-historic deposit in the Amaknak cave. This deposit is not considered in the present paper, as it belongs to another, and much older era; but in this case also, the birch was in close proximity to a lot of awls and women's sewing tools which lay by a female skeleton.

Four sea-lion teeth, (17256.) I think the hard ivory which these afford was used for some kinds of sewing awls which were affixed to a handle. I have found these teeth chipped in such a way as to make it evident that something was about to be made of them when the work was interrupted. They split rather easily. The teeth of the Orca or killer-whale, the small teeth of the walrus, and the teeth of the sperm whale were all formerly used by the islanders for various purposes, especially for carving little images or toys.

Four pieces of gypsum (17263.) This comes from near Nunivak Island, at least that is the only locality where the natives have it in any quantity. They use it for labrets and other ornaments, and inlay their kantags very prettily with lozenge-shaped pieces of it. These pieces were all quite small, and intended for beads. These were usually bored before the surface was shaped, and, in the present case, one of the pieces had been bored nearly through, a funnel-shaped pit being made on each side.

One stone arrow or lance point, (17265,) about an inch and a half long, with short barbs and broad haft. It was made of a black siliceous stone. This was the only portion of a weapon found, but the Rev. Father Innokenti told me that there were formerly many seal lances in this cave. The Atka men, who principally hunt on this island, from time to time losing arrows which they could not replace in any other way, and being in no fear of ghosts, were used to replenish their stock from the cave, until the supply was exhausted.

Two beads or bugles (17261) made of the metacarpal bone of a bird's wing, and about half an inch long; also one of the bones from which they were made, (17262.) Two rough pieces of bone, one of which had been sawed longitudinally, (17252–3.) A small ivory pendant (17259) of a figure-of-eight shape with one lobe half an inch in diameter and the other an eighth of an inch; quite flat, and with a small piece of sinew thread tied round the narrow part—evidently an ornament, such as the natives attach to the ends of the strings by which they tie up tobacco and other small bags.

An ivory figure of a spotted hair-seal, (17257,) in a life-like attitude, about an inch and three-quarters long. This was found, so the captain told me, in a little child's seal-skin boot, on which the hair was perfectly preserved. The boot has not come to hand. Another rough figure of some four-footed animal (17258) with a forked tail, perhaps used for smoothing down the asperities of their sinew thread by drawing it through the sharp furrow in the tail. The natives on the mainland use a similar instrument for this purpose. Three curious implements, (17260,) two of them an inch long, and the other two and a half inches long, made of ivory. I have never seen anything like these elsewhere. They are shaped like a small arrow head with the point curved to one side, with one or two deep notches on the concave side, and three or more much smaller ones on the convex edge; a sharp point; a square haft with a notch or two on the convex

evidently for aiding in making it fast to a handle. I think they might have been used in some way connected with sewing work. I believe that the last four ivory articles were found in the boot along with the seal image.

A wooden doll (17446) very rudely made, without arms or legs, and which, by the resin adhering to it, might have once been inserted at the base into something else, perhaps a model of a bidarka. Such toys are frequently seen among the native children. Where the left arm might have been, some one had cut on the figure a rude pair of eyes, a nose, and mouth. On the face of the doll two lines extend backward and upward from the corners of the mouth, which may be intended to represent some form of tattooing.

One rude amber bead, (17270*a*,) evidently of native make, on a sinew thread. The amber was obtained from the lignite beds, which are reported on the islands of Amchitka, Atka, and Unalashka, and may exist elsewhere. We know that amber was held in great esteem by the early natives, and extraordinary value set upon it. This bead, therefore, may have represented in value a good many sea-otter skins.

A piece of parchment made from the œsophagus or stomach of the seal, colored red. Eight strips of hair-seal skin with the hair on. The purple-blue throat of a merganser. Two pieces of puffin skin with the feathers on. The skin of a little auk (*Phaleris.*) The scalp of a tufted puffin and one of an eider duck. Another puffin scalp, reddened inside. The skin of a gray-necked finch (*Leucosticte,*) which furnishes the red feathers for the embroidery. A strip of fur-seal skin. Half a dozen pieces of parchment or tanned sea-lion skin. In short, the odds and ends of the work bag of an Aleüt woman. (17271.)

8. A little square piece of grass matting (17468,) rolled up, and containing a little roll of birch bark; three little pieces of hair-seal skin; a little bunch of the hairs from the reindeer's hoofs; another, of the feathers from the tufts of the puffin; a little bit of skin from the belly of the winter reindeer, with the hair of pure white; and, lastly, a bunch of brown and gray hair, quite fine, and apparently human;—all these tied up neatly with a sinew thread.

9. A little grass fold, (17466,) like those the natives use for carrying needles and thread; measuring when folded, five and a half by two inches. Neatly woven and empty.

10. A comb (17251) formed by lashing by the middle, thirteen pegs of wood, sharpened at each end, to a tolerably stout stick with sinew thread of two strands.

11. A miniature grass basket; a toy, an inch and a half long. (17462.)

12. A rather coarse grass basket, (17460,) woven with loops about the circumference of the edge, one black stripe around near the top, and two parallel rows of black tufts inserted into the fabric a little lower down.

13. A shallow, but well and closely woven, woman's work-bag or basket of

grass, (17463,) with brown puffin-feathers woven into the centre of the bottom. It contained two chipped sea-lion teeth, many loose shreds of sinew, parchment, birch bark, some old twisted sinew threads and loose feathers; two rough bits of stick tied to the ends of a sinew braid about a foot long; a clipping of gut-shirt stuff, with a red stripe in it; a neat sinew thread, attached at one end to a little piece of hair-seal skin with the hair on, cut into two tails, and, at the other, to a narrow strip of embroidery (17488) about three and one-eighth inches long and a quarter of an inch wide, with one or two small *Leucosticte* feathers inserted into the edge. In this quarter of an inch are ten longitudinal rows of stitches. The white stitches are made with deer hair, of the white winter coat. The stripes are—red parchment, with distant white stitches in the form of triangles; then three rows, the middle largest, of white stitches on a yellowish ground; lastly, the middle stripe is black, with white triangles stitched in on each side, alternating so as to give the black ground the appearance of a zigzag line. The string is about a foot long, and was probably intended as a fastener for some choice little work-bag. On the strings of such bags the Eskimo invariably have a pendant of some kind, at the very least at one end. The specimen is a lasting testimony to the taste and skill of the unknown workwoman.

14. A fillet, (17465,) made of black human hair, woven at one edge with sinew thread. I have seen similar fillets at Nunivak and on Norton Sound. They are worn with the selvage edge turned downward, and are usually bound around the head. The attraction consists in the gentle waving of the hair during the motions of the dance.

15. A very rough bone knife (17254) and equally primitive handle, another still less finished, but without any handle, and a piece of roughly hewn bone, apparently intended to be made into an awl.

16. Four pieces of pumice for dressing skins. (17266.)

17. A dice-box-shaped piece of fine-grained hard wood, (17250,) apparently Alaska cedar. This is used for cutting the hair to an even length, on strips of skin used for trimming. The strip is wound spirally around the nearly cylindrical bit of wood, fastened, and then, with a sharp knife (stone or iron,) the hair is evenly trimmed. A flat board, on which the same might be done, and with the same amount of available surface, would be inconveniently large and awkward to carry about. The dimensions of this substitute are five inches long by one and a half in diameter.

18. A gut bag, (17467,) about fourteen by twelve inches, ornamented with stripes of red parchment and a border of hair-seal skin with deer-foot hairs inserted into it. This is precisely similar to work bags now in use. It only contained a strip of trimming, as bright as the day it was made. This was an inch and three quarters long, composed of red and white parchment and a purple duck scalp.

19. Five toy kantags, (17448–52,) varying in dimensions from two by one and one half inches to three by four inches, evidently the table service of some child, rudely carved out of single pieces of wood. Also a nearly oval dish (17447) about three inches long, with flat up-turned handles.

20. A bit of wood, (17255,) curiously carved, and resembling pieces which are used on bidarkas under the seal-skin lines which extend across the top of the canoe. By moving these about, the lines are lifted so that a paddle or an arrow can be pushed under them and thus secured at sea. If this is the same thing, it is only a miniature child's toy. I can think of no other explanation of it.

21. A curious kind of narrow fillet or braid, (17269,) consisting of a twisted thread of some animal substance resembling wool or the under fur of a dog or fox, wound alternately over each of two parallel cords of sinew, and crossed between them, so as to resemble, externally, a braid of three strands, though only one thread is actually employed.

This completes the list of the articles found in the cave. It is hardly to be expected that the discoveries should in all respects confirm the literal accuracy of the tradition which has doubtless grown in precision with the lapse of time, as it was passed from one to another. The identification of the individuals mentioned in it was hardly to be hoped for. If the large case, which has been described in detail, was that of the old toyon's son, he must have been older than the tradition asserts. It must be borne in mind also that two of the packages were not forwarded to the National Museum, and one of these may have been that of the child in question. Nor do either of the young children mentioned appear to be of sufficiently immature development to justify the assumption that they represented the prematurely-born infant mentioned in the story.

Apart from all this, the fact that all the contents of the cave examined show no trace of any influence arising from civilization (if we except the diseased cranium mentioned) is sufficient to put it beyond a reasonable question that the interments were of at least as early a date as that I have assigned to them.

I may now consider the material which has accumulated relative to the Kaniag'mūt cave-burials. We learn from Lisiansky and others that the whalemen of the tribe were considered a peculiar caste among their countrymen. Although held in high esteem for their courage and skill, and for the important contributions to the sustenance of the community which were due to their efforts, it is related that, during the whaling season, they were considered unclean and did not mingle with the rest.

The profession was hereditary, and the bodies of the whalers were preserved in the same manner as previously described among the Aleüts, and placed in caves the locality of which was kept secret, and was known only to those of the same family who were interested in the remains. This precaution was necessary,

as a certain luck or success in the profession was attributed to the possession of the bodies; which increased in direct ratio to the number of such articles possessed by the particular individual. Hence the hunters did not hesitate, if they could without detection, to steal the remains belonging to another whaler, thus hoping to diminish his success and increase their own. It is known or asserted by the natives that such bodies still remain intact in some of these caves, though their precise locality is known to few. M. Alphonse Pinart, while in Kadiak, attempted to discover the retreat of one which was particularly spoken of, but was not successful. Afterward the United States Deputy Collector of Customs for the port of Kadiak, Mr. L. Sheeran, and another person succeeded in discovering and carrying to St. Paul's the mummy in question. It was discovered, through a peculiar superstition, the existence of which is a curious commentary on the orthodoxy of these nominal Christian converts of the Greek Church.

It appears that the natives of Ugámuk Strait, Kadiak Island, near the situation of the cave, were accustomed to take the first berries, oil, and fish of the season, into the cave where this mummy was placed, and to leave them there; declaring that, when they returned a few days after, the mummy had eaten the food, for the dish was invariably empty. In order to propitiate the spirit of the ancient whaler they unconsciously furnished the marmots and spermophiles with an acceptable meal.

By watching in the shrubbery when the offering was being carried to the cave its locality was discovered. Beside the well-preserved body to whom the offerings were made, another, much decayed, was found, of which the skull only was brought away.

While at Kadiak, in June, 1874, Mr. Sheeran was kind enough to show the remains to me, and to present, to the National Museum, the skull above mentioned. (17489.)

The mummy had been dried in a squatting posture, with the knees drawn toward the breast. It was well preserved, and, when found, only dressed in the remains of an old gut shirt or kamlayka. The hair was black and tolerably long. In the hand was held a slender stick, to which was attached a narrow slate lance-head about an inch wide, sharpened on both edges, without barbs, and simply pointed. It was five or six inches long. On the point of this lance-head was transfixed a rude figure, cut out of tanned seal skin deprived of the hair; this was said by the natives, according to Mr. Sheeran's account, to represent the evil spirit, whose enmity the dead man averted on being propitiated with the offerings of food. The natives of St. Paul's were in wholesome awe of the deceased; would avoid passing at night the out-house in which it was kept, and, on one ocasion, complained to Mr. Sheeran that he did not feed the dead man

sufficiently, as he had been noticed by the town watchman (a native) prowling around, on a stormy night, through the town! presumably in search of food.

The Kadiak natives made great use of masks in their dances and festivals, especially those in which the Shamans took part. They are said to be deposited in many places with the dead. The localities were not stated, and our short stay at Kadiak precluded any attempt at a search.

It is stated by some of the half breeds, who pretend to be acquainted with the native traditions, that it was a not uncommon practice to dry the bodies of the dead in some natural attitude, and to place them in a cave or rock-shelter dressed in gay attire, and arranged as if in some occupation characteristic of the individual's pursuits in life. Thus, women were placed as if sewing, or nursing children; noted hunters, in bidarkas engaged in transfixing the effigy of a seal or otter; or old men as occupied in beating the tambourine, their recognized occupation in the dances and festivals of all the Innuit. By them were placed the masks which they wore in life, or sometimes the individual was dressed in his wooden armor, arrayed in his mask, and supplied with wooden models of his implements or the game or fur animals which were his favorite pursuit. For some reason or other, actual weapons or implements were rarely placed with the dead, but were represented only by wooden models.

While we had no opportunity of examining any Kaniag'mūt caves of this kind, an opportunity was offered at Unga, one of the Shumagin Islands, to examine a noted locality for these remains. The present inhabitants of the Shumagins are true Aleüts, and have been reported as such since the Russian occupation. Hence I ascribe the agreement of what we discovered in the Unga rock-shelters with the descriptions of the Kaniag'mūt modes of interment, to the close proximity and greater intercourse of the Shumagin Aleüts with the former people.

The locality mentioned is near Delaroff Harbor, Unga Island; and the cave, so-called, consists of a series of rock-shelters formed by the breaking down of the perpendicular basaltic bluffs into a huge talus of immense broken rocks. Between these exist an interminable series of crevices, sometimes forming chambers of some magnitude, but more often narrow and intricate. In some places the shelter was sufficiently good to ward off any rain or snow, and in the largest of these, covered by an immense block of basalt, we found the greatest number of remains. Others were scattered singly or in small groups in various other suitable crevices or nooks under the rocks. The remains had been visited by several persons at different intervals before our visit, and had been considerably disturbed. M. Pinart, especially, had secured the cream of what was contained there, though much that was valuable remained behind. It seemed also, as if the frequent earthquakes common to the region had had their share in disturbing the deposits, especially from the position of some of the crania, which took several hours of hard labor to extract from the crannies in which they

were wedged. Large numbers of fragments of rock had also fallen from above, which aggregated several tons in weight, and had to be removed piece by piece; a work of no little magnitude.

The materials, after they were removed, and the dèbris carefully searched for anything remaining, were hardly of a character to afford a basis for a general description of the method employed in treating the dead. Indeed we would have been able to comprehend the purport of but little of what we collected, without the assistance of the information we had received from the natives on the spot, and those at Kadiak, and elsewhere.

The collection comprised only a single implement, a sharp-pointed piece of bone, which looked as if it might have been used in making some of the more delicate portions of the carving.

The remainder consisted entirely of wooden carvings (14941 *et seq.*) and human bones, particularly crania, of which thirteen of various ages were collected. Several mummies wrapped in matting and seal skin, similar to those described from Kagámil, were observed in another crevice. The crania only were taken, as the rest of the remains presented nothing very remarkable and were very much decayed. The remains of the cases of several mummies of children were found in the same place and some bits of fine matting.

The wooden carvings presented a great variety of forms, of which it seems desirable to make only a general enumeration. Most of them were of a cork-like consistency from great age; nearly all were injured or broken; some crumbled under the brush used to remove loose dirt from them. The best preserved specimens, as previously related, had been removed by others. In 1868 Captain Chas. Riedell gave me a perfect mask which had been obtained from this locality and is now in the National Museum. In 1873 I obtained a few more in good condition and a very large number of fragments, of which I collected only the better preserved pieces. The nose, being the thickest portion, is longest preserved; and there must have been fifty noses among the dèbris which deeply covered the floor of the crevice.

These masks were all different from one another, but made on one general type. They would average twenty inches in height and sixteen in width if the convexity be taken into account. They were nearly all similar in having a broad thick but not flattened nose, straight and not projecting eyebrows, thin lips and a wide mouth, into which little wooden teeth were inserted. They also agreed in being painted in various colors, usually black and red; in having bunches of hair pegged in to indicate a beard; sometimes hair across the upper edge of the forehead; in being pierced only in the nostrils; and in having the ears large, flat, and usually pegged on, much above the normal plane in human beings, generally at the upper posterior corners of the mask.

Varied patterns were lightly chiselled or painted on the cheeks in many cases.

A small round bar extended from corner to corner of the mouth, inside. This was held in the teeth, as the marks of biting testify, and a further security was provided in the shape of a band passing behind the head. These masks exhibit great ingenuity and skill in carving, especially when we consider that they were made with only stone and bone implements. Various holes about the edges of the mask were used for inserting stiff feathers, trimmed and painted, with little flat wooden pendants, gaily painted, attached to them. Of these we obtained a great number and variety, and could not determine their purpose, as they were all detached, until after seeing a model of a mask made by an old man at Kadiak, and presented to the National Museum by Mr. Sheeran, (16268,) to which similar pendants were attached in their proper places. They were of all shapes, crescents, disks, lozenges, leaf-shaped, and formed like lance and arrow points. They were painted with red, blue, green, black, and white native pigments, often nearly as bright as the day they were put on.

Beside these things which we could determine as having appertained to the masks, there were a great variety of which we were unable to determine the use, unless they were parts of wooden armor or of some mimic pageant designed in wood.

We also found a piece of a bow, an article not in use among the Aleüts, who throw all their lances with a hand-board. This is the only portion of a bow yet discovered in our researches in the islands, though the Kaniag'mūts now use them commonly in hunting birds. They are made of drift-wood, strengthened with numerous cords of sinew.

Among the other carvings were several effigies, mostly of small size, approximating to the human form; some of birds, seals, and one, nearly life size, of an otter. These were mostly painted in a singular manner. There were also long cylinders, painted and carved like truncheons, which had once contained small stones, and been used as rattles by the Shamans. Many of the small sticks, used, both in the construction of wooden armor and also for little gratings to be placed under the person in the bidarka to avoid contact with the wet seal-skin, were found, but always separated. A carving representing a human arm and hand of life size, but nearly flat, was found, but afterward unfortunately lost.

Many nondescript pieces of carving, which had once been attached to something, and several pieces of wood full of holes, to which something had once been pegged, were found, but our knowledge was not sufficient to refer the isolated pieces to their proper connections.*

---

* Since the above was written, a short article, by M. Pinart, has appeared in the *Comptes Rendus*, April 19, 1875, No. 15, in which he speaks of this cave and its contents. He states that the bodies were lying at full length on beds of moss; that they were few in number; and that he believes, from the fact that none of them were wrapped up in the squatting posture usually adopted, that this rock-shelter was devoted to the remains of whalers or fishermen, such as I have described among the Kaniagmuts.

If M. Pinart had been able to devote as long a time to the examination of the cave as our party did, it is

We were informed that rumors were current among the natives that one or more caves—never, so far, disturbed—existed in the southern part of the island near the site of an old settlement, now abandoned. Our time was too much taken up with other and imperative duties to permit us to attempt a search, which would probably have been fruitless in the lack of a guide.

There are statements in some of the old voyages to the effect that the Kaniag'-mūts sometimes interred their dead in the ground, covered them with stones, and erected poles in the vicinity. We have seen no traces of such a practice, though it may have been in vogue among them. The custom, common enough among the Innuit, of erecting poles, streamers, &c., about the dead, now grown to be a matter of superstition, I have no doubt originated in a desire to scare away wild animals. The custom of huddling the body up in a squatting posture, had probably its origin in the desire to save space and labor in making the box or case, or in digging the grave. How much these practices depend upon surrounding circumstances may be seen by comparing the modes in different regions.

In the Chūkchi Peninsula, the Innuit expose their dead where wild animals, as well as their own dogs, may devour them. There is no soil in which to inter them, no wood with which to burn them, nor poles to use as scarecrows against bears and foxes.

In the Yukon region where the soil at a certain depth is frozen, but there is plenty of wood, the body is usually placed in a wooden box erected on four short posts.

In the Aleutian region where the soil offers no obstacle to grave digging, and drift-wood is tolerably abundant, the absence of wild animals, and the readiness with which animal matter dries without putrefying, rendered it an easier task to lay the dead away in the rock-shelters which may be found near almost every camping place.

All these methods (except the first) were originally adopted with a conscious or unconscious relation first to the convenience of the survivors, and then to the security of the dead. Yet they have been modified, or so loaded with other performances indicative of respect or affection, that the question of convenience no longer arises to conflict with hereditary customs which have grown by slow degrees. In this we may trace somewhat of the growth of senti-

---

probable that he would have found sufficient reason for modifying or rejecting his first impressions. The fact that the remains of women and children, some still retaining portions of their original wrappers, were found in this place by us, is proof that it could not have been one of the caves devoted to the preservation of the remains of whalers or fishermen, from which women and children were, by the nature of the case, excluded. After Mr. Pinart had collected what he chose to take away, we obtained more than a dozen crania of different sexes and ages, showing that the number of interments was larger than he had supposed, and it is certain that nearly all those we found which were sufficiently well preserved to show the method of interment, had been preserved in a squatting posture. Of the identity of the cave or shelter with that visited by M. Pinart there can be no doubt, as we had the same individual, as a guide, who had accompanied him in his examinations.

ment, (as opposed to savage utilitarianism,) which is characteristic of the human mind in all ages.

Since the above was written the National Museum has received from the Alaska Commercial Company a mummy, and a large number of masks collected by their agents at some locality on Chugach or Prince William Sound, Alaska Territory.

The mummy was stripped of its coverings, if it had ever had any; and was that of an adult male. It had been eviscerated through the pelvis and bore marks of the incisions (made by most of the Innuit) for labrets. These were below the corners of the mouth, one on each side. The hair was long and black with no indications of the tonsure. A string around the neck with a few old-fashioned Russian beads upon it, fixed the date as subsequent to the advent of traders. There were no other articles of use or ornament with the remains, which were well preserved.

The masks were flat, rude and heavy, of a different type from those of Kadiak and the Aleutian region, showing much less facility in carving, and less taste and artistic skill. They had been ornamented with rude figures or patterns in red iron-stone pigment, which, however, at some recent period had been retouched with vermillion paint. No information came with the specimens; and it is possible that the finder, thinking to enhance the value of his prize, employed some native to restore the faded ornamentation. They were worn by help of a cross-bar held in the teeth and a wooden lattice at the back of the head. A few stumps of feathers around the edges indicate that they were originally bordered with a row of plumes.

A special article on the masks of this region of America is in preparation.

The specimens just mentioned are interesting, as showing an eastward extension, greater than before supposed, of customs which are only well known in connection with the natives of the Aleutian region; and, as adding one more link to the chain which binds in close relationship the Aleüt and adjacent continental Eskimo.

LIST OF ILLUSTRATIONS.

Plate I.

17480. Aleüt mummy from Kagámil cave. (See page 19.)

This specimen, for the purpose of maintaining it in an erect position while being photographed, was placed in one of the wooden kantags from the same cave, (17459,) which is fourteen and one-half inches long.

17481. Aleüt mummy from Kagámil cave. (See page 19.)

This is of an adult person, the other being that of a youthful person. The lashings have been removed from the upper portion to inspect the contents, but the general condition is hardly disturbed otherwise. The lashings are of rope made of grass.

Plate II.

17478. Large mummy case from the Kagámil cave. (See pages 11–18.)

The case is raised to give a partial view of the upper surface; (here facing downward;) one of the loops by which it was originally suspended is visible (about the center of the figure) attached to the rim of the top. Two kantags from the cave were used to support it while being photographed.

Plate III.

17478. Large mummy case from the Kagámil cave. (See pages 11–18.)

The case is viewed from the side, resting on the surface which was uppermost when it was suspended. The sinew of the two nets with which it is covered was originally taut, but from absorption of atmospheric moisture has become loose and slack. Between the nets and the seal-skin cover of the case are seen the remains of an old gut-shirt or kamlayka. The feet of the contained mummy were situated in that part of the case which in the plate is uppermost.

Plate IV.

17474. Breast mat of grass-cloth from the large Kagámil mummy case. (See page 15.)

This is somewhat magnified to show the mesh of the fabric.

Plate V.

17482. Aleüt mummy wrapped in seal hide. (See page 18.)

The wrappings have not been disturbed, but do not meet below, where the pelvic foramen is visible.

17483. Aleüt child's mummy case. (See page 20.)

This is covered with fine grass-cloth. The loops for suspending the case in the air are visible on each side. One of them has given way.

PLATE VI.

17249. Ancient Aleüt wooden armor. (See page 18.)
This was fastened behind by loops of cord and the buttons which are still in place.

PLATE VII.

17250. Wooden implement for making fur trimming. (See page 25.)
17254. Bone knife and handle from Kagámil cave. (See page 25.)
17255. Piece of carved wood from Kagámil cave. (See page 26.)
17264. Pumice for dressing skins. (See page 25.)
17446. Wooden doll from Kagámil cave. (See page 24.)
17447. Toy dish from Kagámil cave. (See page 26.)
17448. Toy kantag from Kagámil cave. (See page 26.)
17461. Toy grass basket from Kagámil cave. (See page 24.)
17462. Toy grass basket from Kagámil cave. (See page 24.)
17466. Fold for needles, &c., of grass-cloth, from Kagámil cave. (See page 25.)
17468. Grass matting, of the coarse common kind, with rectangular mesh, made from the grass itself and not from prepared fibre. (See page 16.)
17472. Piece of face cloth, showing the pattern, made of grass fibre, and found in the large mummy case from Kagámil cave. (See page 15.)
17474. Breast mat from the large mummy case, a portion of which, magnified, is shown on plate IV. (See page 15.)

PLATE VIII.

17443. Pushing stick found with the large mummy case in Kagámil cave. (See pages 18, 21.)
The lashing near the point is extraneous.
17444. Part of the keel of a bidarka from Kagámil cave. (See page 21.)
17453. Berry kantag, laid on its side. (See page 21.)
17457. Wooden kantag from Kagámil cave. (See page 21.)
17458. Wooden kantag from Kagámil cave. (See page 21.)
17459. Wooden kantag from Kagámil cave. (See page 21.)

PLATE IX.

17479. Aleüt mummy stripped of its wrappings. (See page 19.)
Note that the left fore arm is broken to make the package more compact.

PLATE X.

17251. Wooden comb from Kagámil cave. (See page 24.)

17254. Ivory image of seal from Kagámil cave. (See page 23.)

17255. Ivory image of fork-tailed beast from Kagámil cave. (See page 23.)

17259. Ivory pendant from Kagámil cave. (See page 23.)

17260. Three ivory implements, not weapons, perhaps used in sewing or netting, from woman's work-bag found in Kagámil cave. (See pages 23–4.)

17261. Two beads or bugles made of bird's bones. (See page 23.)

17263. An unfinished gypsum bead showing the beginning of the perforation. (See page 23.)

17264. Bracelet of beads made of bird's claws, from Kagámil cave. (See page 22.)

17265. Stone dart-head from Kagámil cave. (See page 23.)

17270*a*. Amber bead, on sinew string, found in Kagámil cave. (See page 24.)

INDEX.

Adakh Island; burial caves in, 7.

Alaska Commercial Company; its contributions to the National Museum, 8, 32.

Aleüts, 1; (*et passim.*)

Aleüts; characteristics of the, 3; early conflicts of the, 3; felt no repugnance to the bodies of the dead, 7; festivals and dances of the, 4; identity of the continental Eskimo stock with that of the, 2, 7; Japanese origin erroneously assigned to the, 3.

Aleüt; language, 2; origin of the name, 2; physiognomy, 2; religious beliefs; destruction of vestiges of, 3; superstitions, 4, 5.

Aleutian Islands, 1.

Amber; bead from Kagámil cave, 24; highly valued by Aleüts, 24.

Amchitka Island; skeleton discovered at, 8.

Armor; wooden, from large mummy case, 18; from Unga cave, 30.

Arrow-head; of stone, from Kagámil cave, 23.

Auk; little, skin preserved, 24.

Awls for sewing; of bird's bones, 14.

Baleen; used for lashings, 16, 22.

Barrábora, (see *Winter house, Yourt.*)

Barren Islands, 1.

Bark, (see *Pine, Birch.*)

Basket; of grass, from Kagámil cave (17460), 24; ditto (17463), 24–5; contents of, 25; (17461), 22.

Beads; of amber, 24; of bone, 23; of gypsum, 23; of bird's claws, 22; of Russian manufacture, 32.

Bering's Expedition, 9.

Bidarka; made by Kat-háya-koochák, 9; keel of, from Kagámil cave, 21; models of, used as toys for children by Aleüts, 24.

Birch bark; from Kagámil cave, 22; from Amaknak cave, 22; derived from Yukon region, 22.

Birds; bones used for beads, 23; claws used for beads, 22; bones used for needles, 14; scalps used for ornaments and in embroidery, 24, 25; skins used for garments, 13; feathers used for ornamenting embroidery, 12, 24, 25; for ornamenting masks, 30, 32; for ornamenting mummy case, 19; colored cartilage from beak of puffin collected by Nunivak Eskimo, 22; puffin, 12; little auk, 24; cormorant, 12; gray-necked finch, 12, 24; duck, 25; murre, 13; eider, 24; merganser, 24; horned puffin, 22; raptorial bird, 19.

Bodies of the dead; preparation of, for burial, 6; evisceration of, 6; encasement of, 6; encasement of infants, 6; food placed with, 6; utensils and carvings deposited with, 6; (see *Mummies.*)

Bone implement from Unga cave, 29.

Bone knives from Kagámil cave, 25.

Boot; seal-skin, found in Kagámil cave, containing ivory articles, 23.

Bow; piece of a, found in Unga cave, 30; not used by Aleüts, 30.

Bracelet of bird's claws, 22.

Braid of wool or under fur of fox, from Kagámil cave, 26.

Breast-mat; of grass fibre, in large mummy case, 15.

Brown hair; the result of fading, 21.

Burials; methods of the Aleüts, 5, 31; of the Chūkchi, 31; in the Yukon region, 31; for honorable persons, 5, 6; for poor persons, 5; in artificial caves and rock shelters, at Amaknak Island, 5; at Atka Island, 5; in caves, at Unga Island, 28; among the Kaniagmūts, 27; in the earth, by Kaniagmūts, 31; by the Aleüts, since Christianized, 6; of pre-historic natives, 6; in compartments of the winter houses or yourts, 7; origin of diverse kinds of burial, 31.

Bugles, (see *Beads.*)

Carved wooden implement from Kagámil cave, 26.

Carvings; wooden, from Unga cave, 29, 30.

Catherina Archipelago, 1.

Cave on Kagámil Island, (see *Kagámil Island,*) 8.

Celt; stone, unique, from the Aleutian Islands, 5.

Charcoal and oil; used as black pigment, 14.

Chernoffsky Harbor, Unalashka; burial caves and carved wooden tomb at, 8.

Chugach Bay, 28.

Comb; of wood, from Kagámil cave, 24.

Contents of Kagámil burial cave, 11 *et seq.*

Cormorant; white feathers from, used in embroidery, 12.

Crania; from Atka rock-shelter, 5; from Kagámil cave, 20; from Kadiak, 27; from Unga rock-shelter, 29.

Crutch-handled stick, (see *Pushing stick.*)

Deer, synonymous always with *Reindeer.*

Deer-hair; the white, used in embroidery, 14.

Deer-skin; white patches of, used in embroidery, 14.

Deer-sinew; used for making thread, 14.

Delaroff Harbor, Unga Island, 28.

Dish; oval wooden, from Kagámil cave, 26.

Doll; Aleüt, from Kagámil cave, 24.

Duck, 25.

Eider, 24.

Elymus; a grass used for making matting, 12.

Embroidered pendant from woman's work-basket, Kagámil cave, 25.

Embroidery; Eskimo, materials used in, 14; of Tinneh Indians, materials used in, 14.

Engel; Samuel; his *Memoires*, 2.

Eskimo tribes of the Catherina Archipelago, 1.

Exposure of the dead, practiced by Chūkchi, 30.

Face cloth; of grass matting, in large mummy case, 15.

Feathers used in embroidery; (see *Leucosticte*, *Cormorant*, *Puffin*, etc.)

Fillet of human hair, from Kagámil cave, 25.

Fish-skin; used in embroidery by Eskimo, 14.

Fox skins; placed with mummied infant, 20.

Fur-seal, (see *Seal.*)

Grass; used for weaving matting, 12; used for making baskets or work bags, needle cases, etc., 22, 24, 25; used for making rope or cord, 19.

Grass baskets, (see *Basket*, *Work-bag.*)

Grass fibre; preparation of, for use in weaving, 12.

Grass matting from Unga cave, 29.

Grass matting, (see *Matting.*)

Grass rope or braid, made by Aleüts, 19.

Gray-necked finch, 12, 24.

Gullet of the seal: made into parchment and used in embroidery, 14, 24.

Gut bag, 25.

Gut parchment; bag made of, from Kagámil cave, 25.

Gypsum; used for inlaying wooden ware and making beads, 23; found near Nunivak, 23; unfinished beads of, found in Kagámil cave, 23.

Hair; human, from Kagámil cave, 24; of reindeer, 24.

Hairs, used in embroidery; from the hoof glands or hoof tufts of the reindeer, 12; from the white patches on the skin of the deer, 14.

Hair-seal skin; used in embroidery by Eskimo, 14; different methods of preparation, 14.

Hair-seal; ivory model of, 23.

Hair-seal, (see *Seal.*)

Hoof tufts of the reindeer; the hairs used in embroidery, 12.

Horned puffin, 22.

Identification of Kagámil mummies, 26.

Implements of ivory; use unknown, found in Kagámil cave, 23; probably used in sewing or netting, 24.

Ivory figures from Kagámil cave, 23; used for smoothing thread, 23.

Kadiak group, 1.

Kagámil Island; celebrated burial cave on, 8; visit to, 8; reached by Capt. Hennig in 1874, 8; Father Shayesnikoff's account of, 8; character of the rock composing the cave, 9; atmosphere of the cave hot, 9; mummies from this cave, 9 *et passim.*

Kaniag'mūts, 1; 26 *et seq.*

Kaniag'mūt cave burials considered, 26.

Kantags; placed in mummy case, 17; from Kagámil cave, 21; miniature, from Kagámil cave, 26; obtained by Aleüts and others through barter with the Continental Innuit, 21.

Kat-háy-a-koochák, the toyon, 9; tradition of, 9; death of his son, 10; funeral ceremonies, 10.

Keel of bidarka, from Kagámil cave, 21.

Killer-whale, (see *Orca.*)

Knives, of bone, from Kagámil cave, 25.

Kyak, (see *Bidarka.*)

Labrets, incisions for, present in mummy from Prince William Sound, 32.

Lance-head; of stone from Kagámil cave, 23; with Kadiak mummy, 27.

Lazeroff; Maxim, 9.

Leucosticte griseinucha; feathers of, used in embroidery, 12.

Lisiansky's account of Kaniag'mūt customs, 26.

Masks; Aleüt, 4; used as protection against spiritual emanations, during religious rites, 5; placed over the faces of the dead, 5; from Unga cave, 29; ornamented with hair, and colors, 29; with feathers and painted wooden pendants, 30.

Masks, used by Kaniag'mūts, 28.

Masks from Prince William Sound, 32; painting on, retouched, 32; how fastened on, 32; ornamented with feathers and colored designs, 32.

Matting; grass, from large mummy case, (17469,) 12; ditto, (17470,) 13; (17472,) 15; (17473,) 15.

Merganser, 24.

Micaceous oxide of iron; used as a pigment in embroidery, 15.

Models of weapons or implements made of wood and placed with mummies, 28.

Mormon cirrhata, (see *Puffin.*)

Mormon corniculata, 22.

Mummies of whalers, (see *Whalers.*)

Mummies from Kagámil Island cave, 9 *et seq.*; age of the oldest, 9, 26; tradition in regard to, 9 *et seq.*; (I-X) described, 18–20; two given to California Academy of Sciences, 18; of Kaniag'mūts, 26, 28; dressed and placed in characteristic attitudes, 28.

Mummy case; principal, from Kagámil cave (17478), 11; contents of, described, 11–18; human remains in, 11, 12; wrappings about the remains, 12–16.

Mummy from Prince William Sound, 32; age of, determined by beads, 32.

Murre, 13.

Nails; ornamental, of walrus ivory, 17.

Needle case, of grass, from Kagámil cave, (17466,) 24.

Nets; of sinew on large mummy case, 18.

Nikiferoff; Ivan, his voyage, 9.

Orca teeth; used for carving, 23.

Orchis root; used as food by Aleüts, 22.

Origin of the Aleüts, 2; of burial customs among savages, 31.

Oxide of iron; used as red pigment, 14.

Parchment; made from gullets of seal, 14, 24; made from intestines of seal, 20, 25; made from seal skin, 24; used for embroidery, 24, etc.; used for kamlaykas, 20, 27; used for work-bags, 25.

Parka; bird-skin, from large mummy case (17471), 13; embroidery of, 13, 14; made of puffin and murre skins, 13.

Pendant; of ivory, from Kagámil cave, 23; of needle work, 25.

Peziza; a blue-green mould found in decayed birch-wood; used as a green pigment, 14.

Phaleris (little auk), 24.

Pigments for coloring materials used in embroidery, 14.

Pinart; M. Alphonse, collections by, at Unga, 28; account of Unga cave, (note,) 30.

Pine bark; from Kagámil cave, 22; resinous part used as wax, 22; affords red pigment, 22; used as tinder, 22; derived from Sitkan region, 22.

Poles about graves, their use, 31.

Prince William Sound, 32.

Puffin skins; used for making clothing, 13.

Pumice used for dressing skins; found in Kagámil cave, 25.

Pushing stick for bidarka in shallow water, 18, 21; ornamentation on, 21; attached to bidarka by string, 21.

Rattles used by Shamans, from Unga cave, 30.

Reindeer, (see also *Deer*;) white belly-patches of winter skin used in trimming garments, 14; white hairs used in embroidery, 14, 25; hairs from between the hoofs inserted in embroidery, 12; hair found in work basket in Kagámil cave, 24; sinew used for making thread, 14. This animal is not found westward of Unimak Island in the Aleutian chain.

Rings, (see *Beads.*)

Rock-shelters; used as burial caves at Unalashka and Atka, 5; at Unga, 28.

Scalps of birds, used in ornamenting embroidery and pendants, 24, 25.

Sea-lion teeth; from Kagámil cave, 23, 25; used for carving, 23.

Seal skin; cut into fringes for embroidery, 15.

Sea-otter skin; used in embroidery, 13, 15; placed with mummies, 11, 19.

Semidi Islands, 1.

Sennit; round, square, etc., (see *Whale sinew.*)

Sentiment; growth of, traced among savages, 31.

Shumagin Islands, 1, 28.

Sinew; (see *Deer sinew*, *Whale sinew*, etc.)

Skeletons, mythical feasts and festivals of, 5.

Sperm whale teeth; used for carving and making implements, 23.

Steaming process for bending wood, 17; for making kantags, 21.

Stitches, different kinds used in embroidery, 14.

Streamers about graves; to repel wild animals and birds, 31.

Strips of fur skins used in embroidery, 14.

Syphilitic caries; shown on cranium, 21.

Tambourines; used by Aleüts at festivals, dances, and funerals, 10; use of, forbidden during time of mourning, 10; beaten by the old men at dances, 28.

Teeth; peculiarities of, among the Eskimo, 21; causes of wearing down, 21; uses of teeth by Eskimo, 21.

Teeth, (see *Sea-lion*, *Orca*, *Walrus*, *Sperm whale.*)

Toys, 23.

Toy basket; of grass, from Kagámil cave, 24.

Tradition in regard to the Kagámil cave burials, 9.

Trapesnikoff's party, 9.

Trimming; made of duck's scalp, 25.

Tufts; of deer, (see *Hoof tufts*;) of puffin, (see *Puffin*, *Feathers*, *Embroidery*, etc.)

Tufts of feathers from the head of the puffin (*Mormon cirrhata*) used in embroidery, 12.

Unga burial cave; contents of, 29; mummies found in, 29; wooden carvings found in, 29; bone implement from, 29.

Unga burial caves, 28; explored, 29; unexplored, 31.

Unŭng′ŭn; real name of Aleüts, 2.

Vay′geli; mythical people called, 4.

Visor; wooden; used by Aleüts, 21; ornamentation of, 22.

Walrus; teeth and ivory used for carving by Aleüts, 23.

Weapons rarely placed with the dead, but represented by models in wood, 28.

Weaving; methods of, 16.

Whale sinew; used for making cord, 18; nets of, 18; braided into square sennit, 18, 19; braided into round sennit, 18, 19.

Whalers, among the Kaniag′mūts, 26; reckoned unclean during the whaling season, 26; profession hereditary, 26; customs with regard to dead bodies of, 26; superstition in regard to the possession of the dead bodies of, 27; discovery of whaler's mummy by Mr. Sheeran, 27; offerings made to mummy by natives, 27; manner of preservation of whaler's mummy by Kaniag′mūts, 27.

Whaler's mummy from Kadiak; complaints by natives in regard to his starvation, 27–8; observed by town watchman promenading in search of food at night, 28.

Winter houses or yourts, 6.

Wooden armor, (see *Armor.*)

Wooden carvings, (see *Carvings.*)

Wooden implement for trimming the hair on strips of skin used in embroidery; from Kagámil cave (17250), 25.

Work-bags, 24, 25.

Yoke; embroidered, on parka, 14.

Yourts or winter houses, 6.

PLATE I.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

ALEUTIAN MUMMIES IN THEIR WRAPPERS.

PLATE 2.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

ALEUTIAN MUMMY CASE, SHOWING UPPER SURFACE AND ONE OF THE LOOPS BY WHICH IT WAS SUSPENDED.

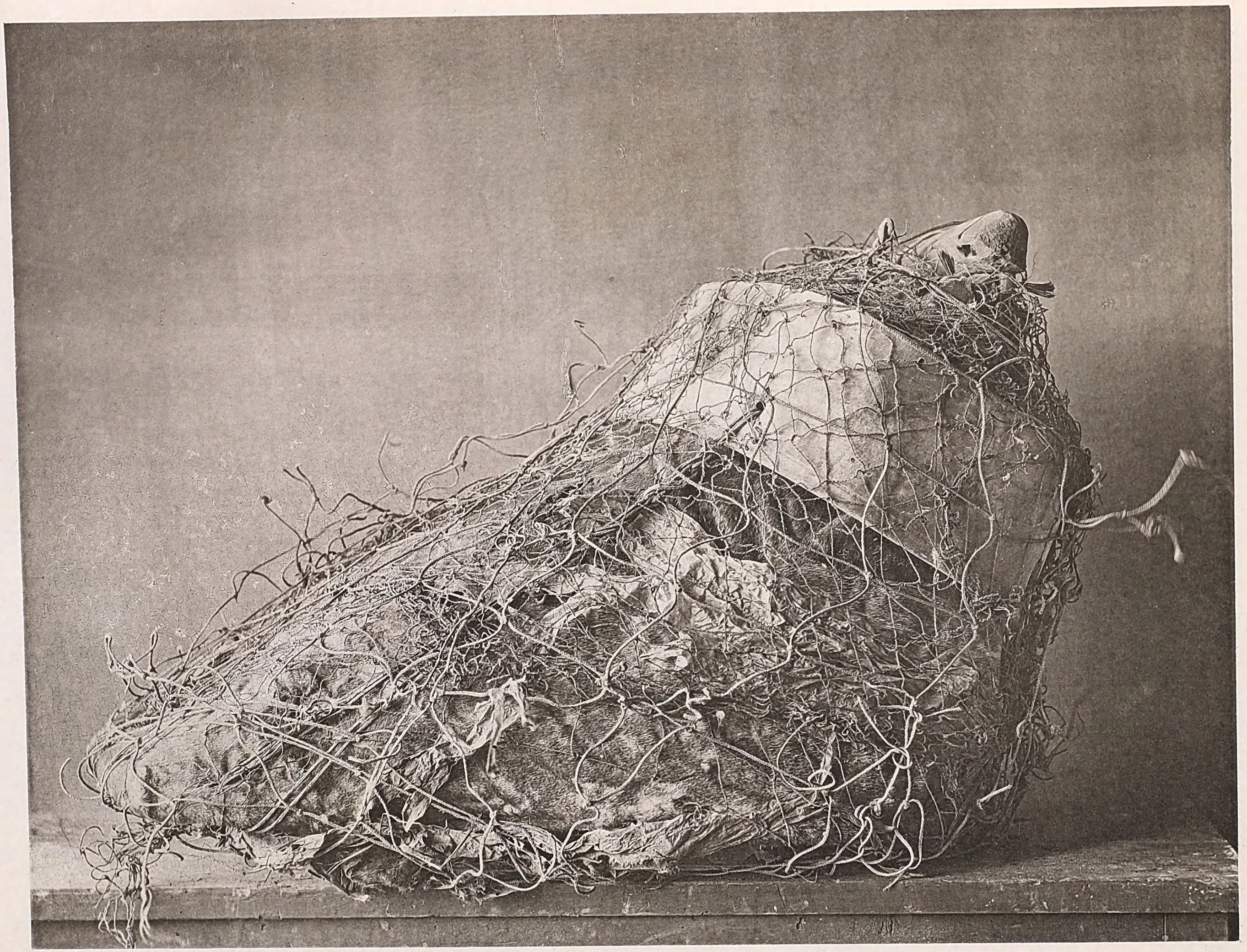
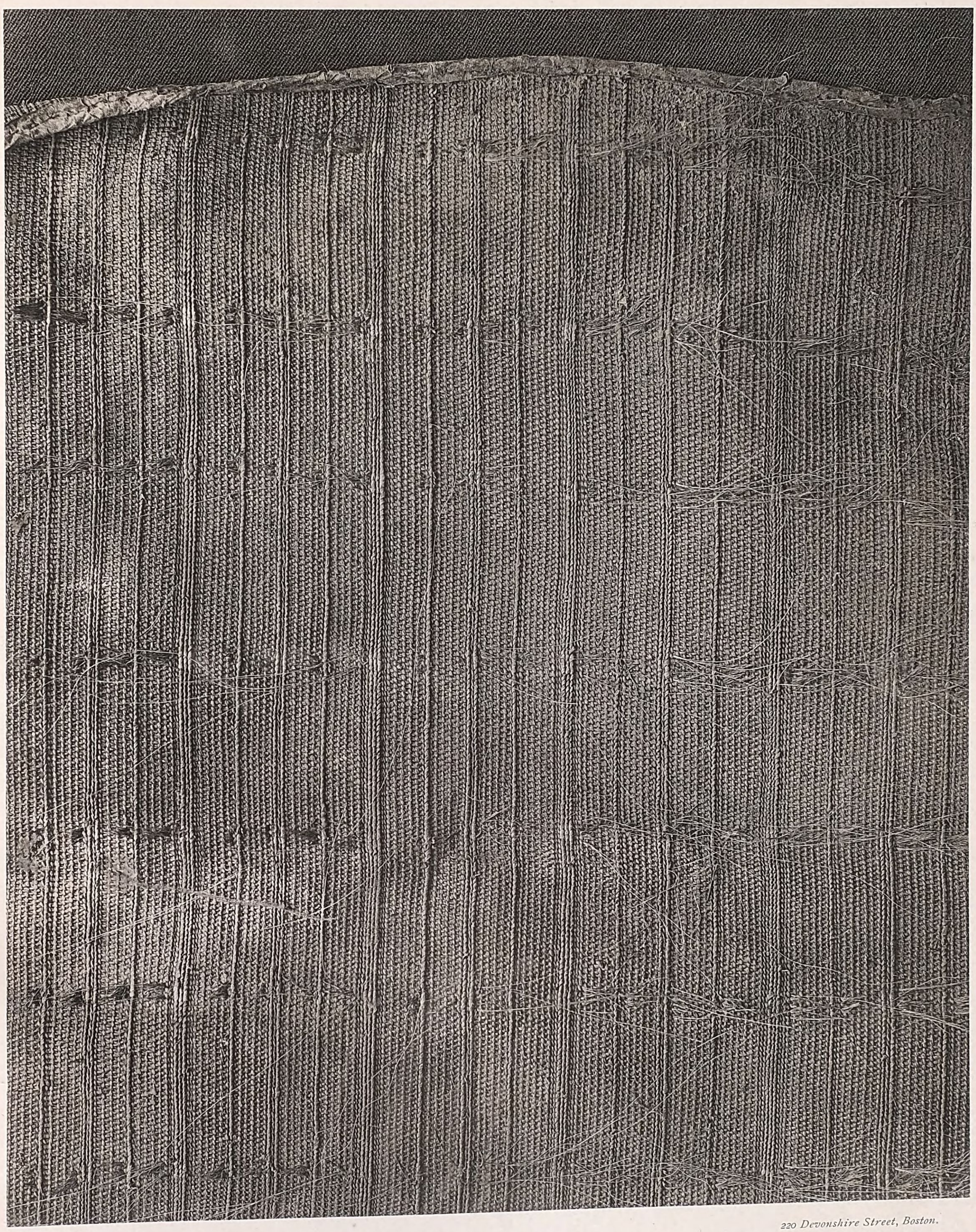


PLATE 3.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

17478.

SIDE VIEW OF ALEUTIAN MUMMY CASE.



The Heliotype Printing Co. *220 Devonshire Street, Boston.*

17474.

ANCIENT ALEUTIAN GRASS-CLOTH.

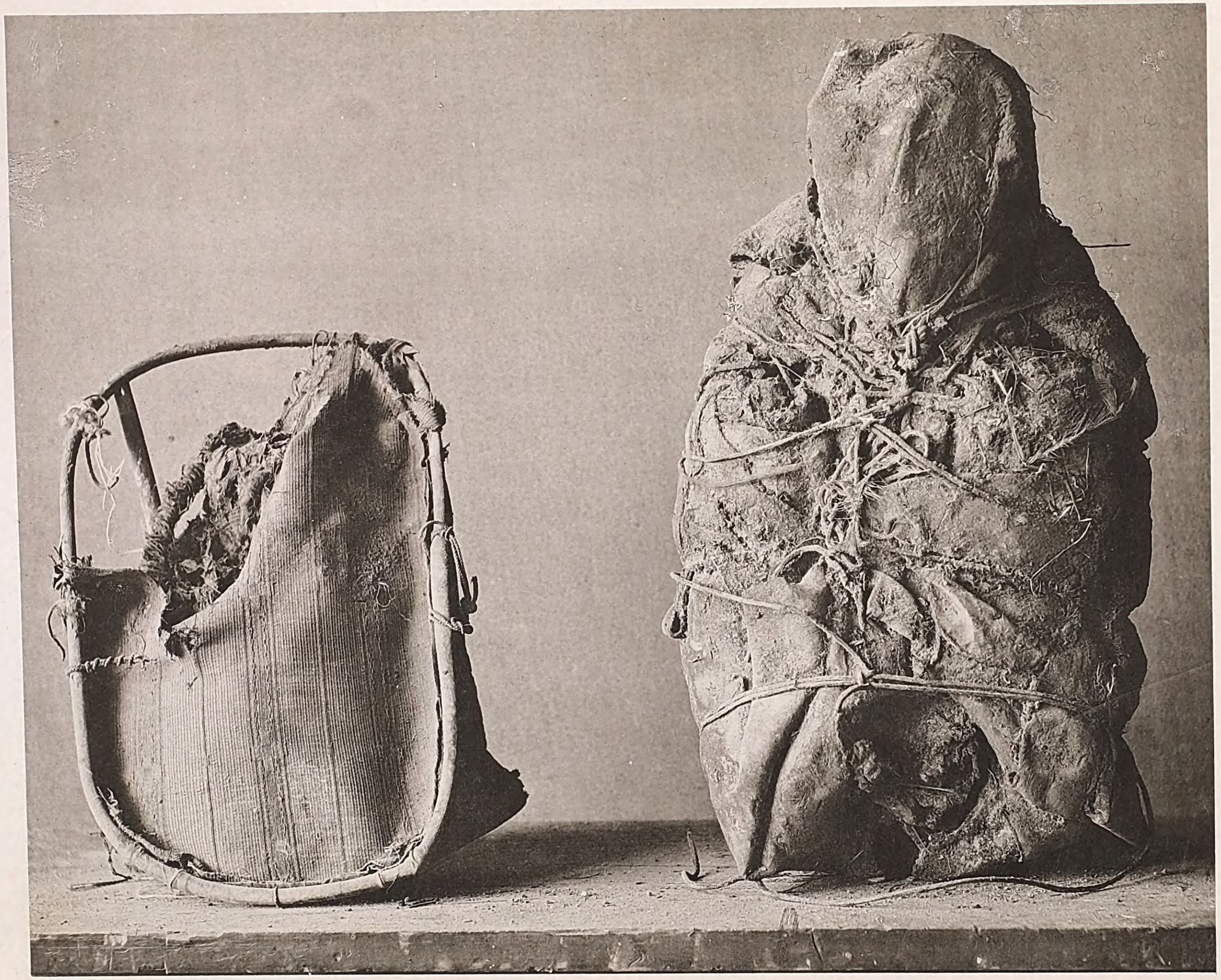


PLATE 5.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

17483. **17482.**

ALEUTIAN MUMMIES.

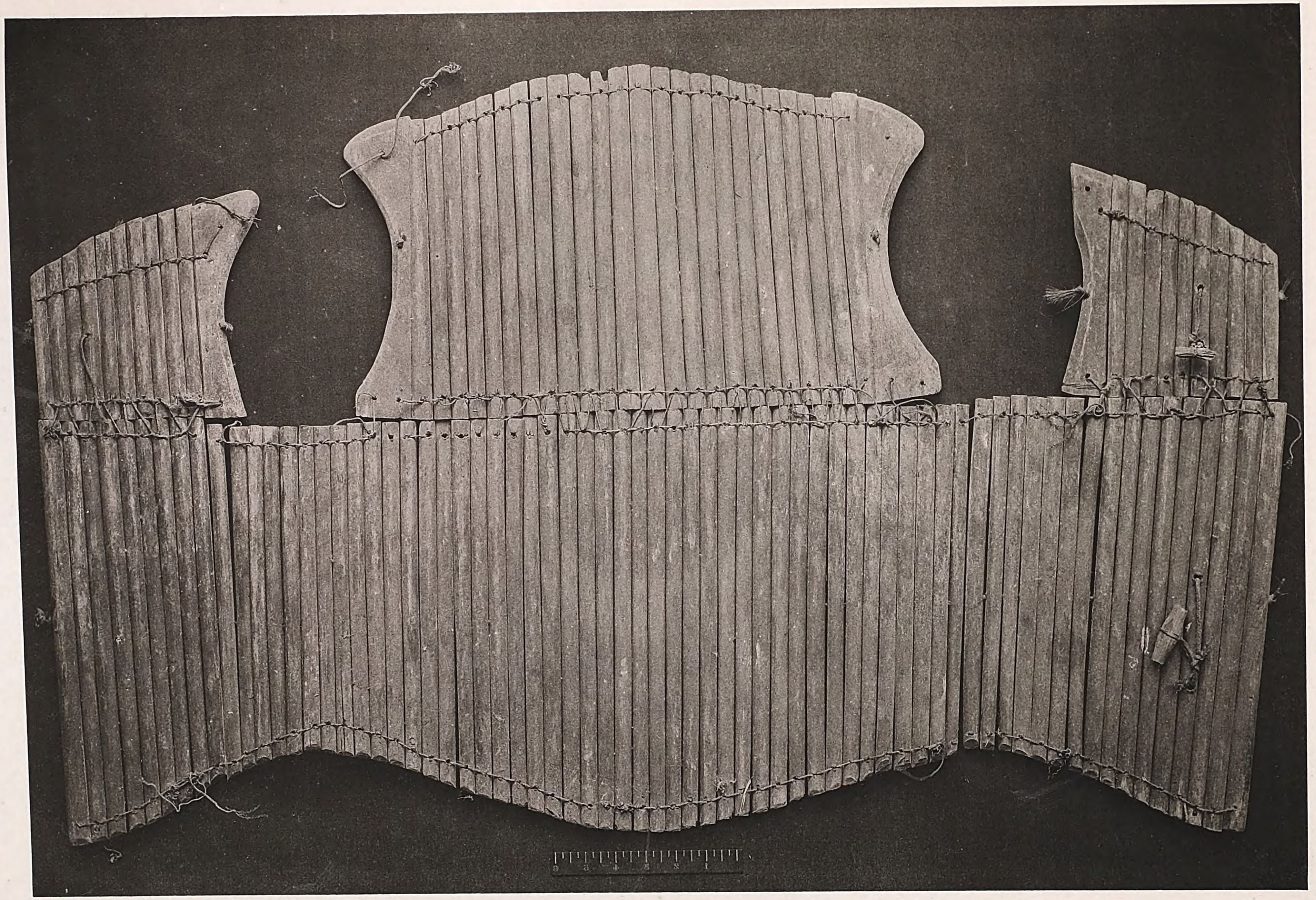
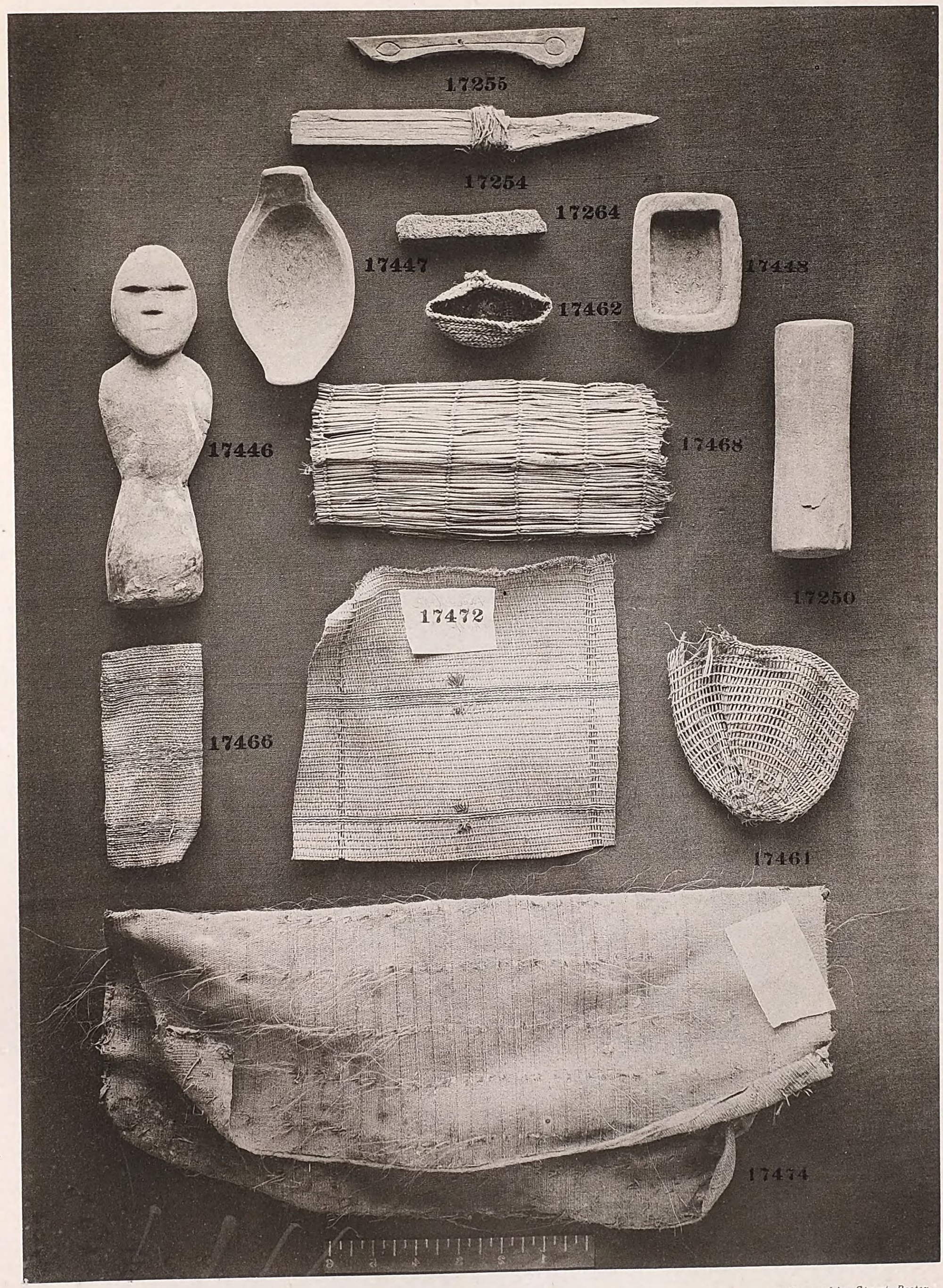


PLATE 6.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

17249.

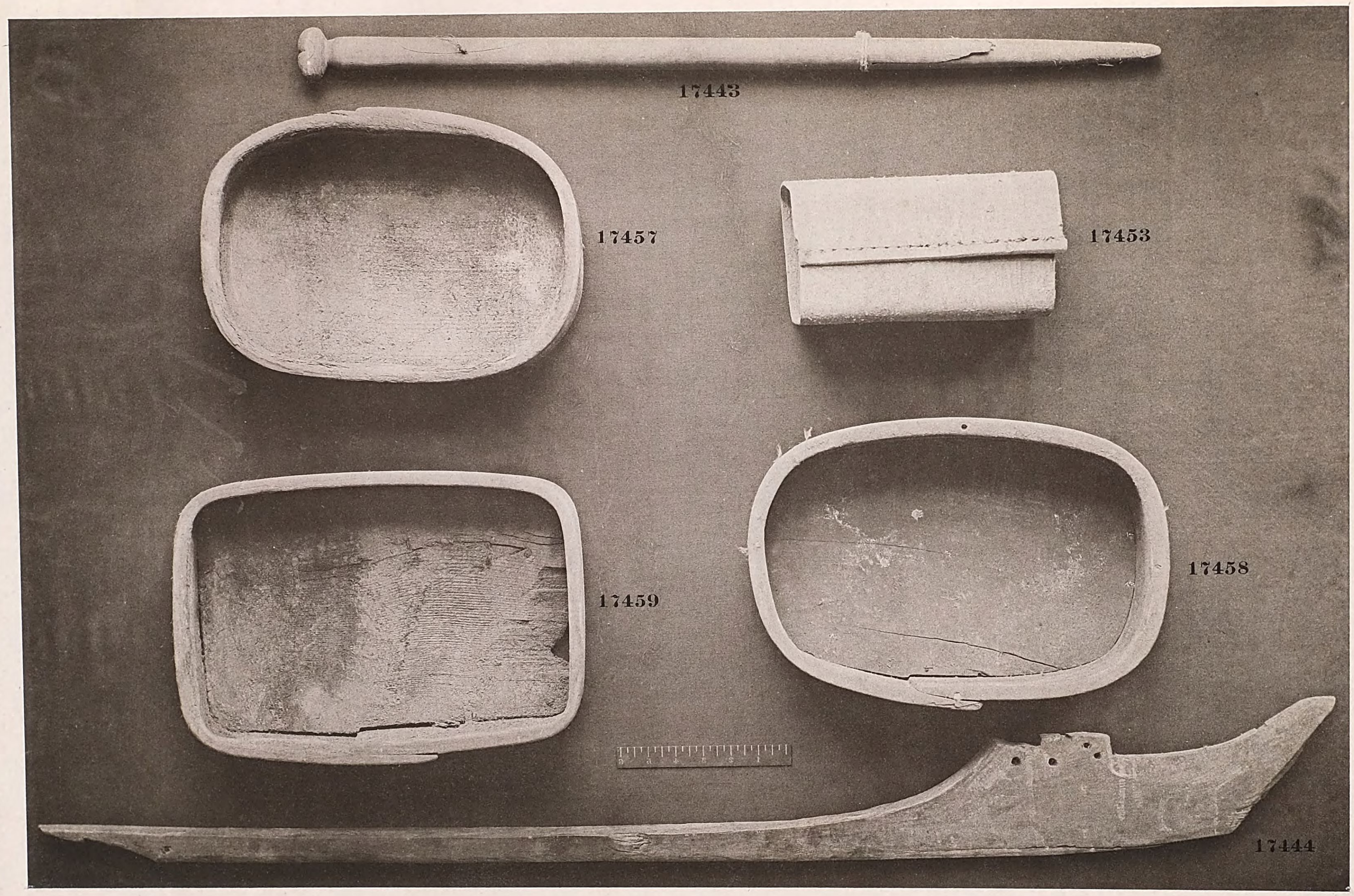
ANCIENT ALEUTIAN WOODEN ARMOR.



The Heliotype Printing Co.

220 Devonshire Street, Boston.

ARTICLES FOUND WITH ALEUTIAN MUMMIES.

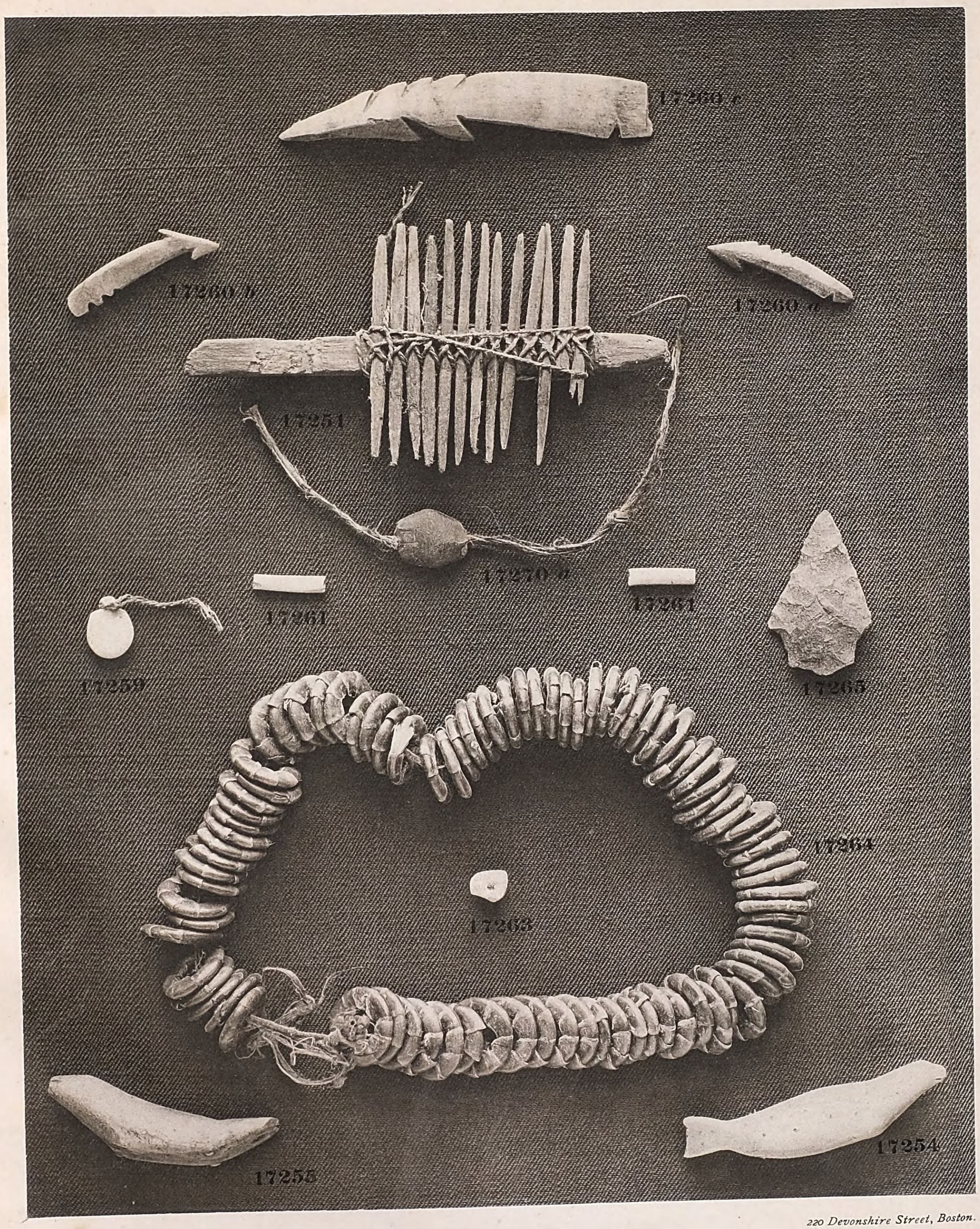


The Heliotype Printing Co. *220 Devonshire Street, Boston.*

ARTICLES FOUND WITH ALEUTIAN MUMMIES.

The Heliotype Printing Co. *220 Devonshire Street, Boston.*

ALEUTIAN MUMMY UNWRAPPED.



The Heliotype Printing Co. *220 Devonshire Street, Boston.*

ARTICLES FOUND WITH ALEUTIAN MUMMIES.

Bayerische Staatsbibliothek MÜNCHEN

BSB Bayerische StaatsBibliothek

MDZ Münchener DigitalisierungsZentrum Digitale Bibliothek

Smithsonian contributions to knowledge

Bd.: 22. 1880

Washington, DC 1880

4 Acad. 157 s-22
urn:nbn:de:bvb:12-bsb11469369-5